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## *Annotation*

# Viruses, Immunity and Mental Disorder

DAVID J. KING and STEPHEN J. COOPER

Are viruses the cause of mental illness, or does stress or mental disorder produce impaired immunity, with increased susceptibility to infection? These two separate but not unrelated questions have been debated periodically and there has been much renewed interest recently, with increased sophistication in immunology and widespread topical concern about immunodeficiency. The neuropsychiatry of the acquired immunodeficiency syndrome (AIDS) (Snider *et al*, 1983; Carne & Adler, 1986; Wortis, 1986; Burton, 1987; Fenton, 1987) and the validity of a 'post-viral fatigue syndrome' as a clinical entity (Behan, 1983; Southern & Oldstone, 1986; Dawson, 1987; David *et al*, 1988) are not discussed here, but have been dealt with in the editorials and reviews cited.

## Early studies

Speculation about the role of infection in mental disorders dates from the 1920s, when Menninger (1926), having observed the frequent occurrence of a 'dementia praecox' picture in post-influenzal psychosis following the 1918 epidemic, went on to propose that schizophrenia resulted from acute infections (Menninger, 1928). The subsequent development of various viral hypotheses of schizophrenia and enigmatic variations thereof have appeared over the years (Torrey & Peterson, 1973; Crow, 1978; Hare, 1979; Crow, 1981, 1983; Baker *et al*, 1983; Crow, 1984), stimulated by the observations that slow or latent viruses can produce diseases of the nervous system after many years' delay, without antibody formation (Johnson & Ter Meulen, 1978) and without the characteristic neuropathological changes associated with inflammation, such as gliosis (Johnson, 1980; Kristensson & Norrby, 1986; Allen *et al*, 1987).

Rimón & Halonen (1969), Rimón *et al* (1971) and Halonen *et al* (1974) first reported increased prevalence and titres of herpes simplex virus (HSV) in psychotic depression. Subsequent studies produced inconsistent findings, however (Pokorny *et al*, 1973; Lycke *et al*, 1974; Cappel *et al*, 1978), and we have shown that both HSV and cytomegatovirus (CMV) antibody levels are positively correlated with age and that no differences are found in either of these antibody titres in any group of psychiatric in-patients when age is controlled for (King *et al*, 1985*a*). Cleobury *et al* (1971) found increased HSV-I antibody titres in 13 aggressive, psychopathic prisoners compared with 14 non-aggressive psychiatric patients and 13 controls, but this, too, was not confirmed by others (Pokorny *et al*, 1973; Lycke *et al*, 1974).

Of course, titres of circulating antibodies may be a poor guide to viral virulence, since host defence to some agents is predominantly by cell-mediated immunity, which also has greater discriminatory power for different types of HSV exposure. Nevertheless, in addition to an increased prevalence and mean titre of HSV (but not CMV, measles or rubella) antibody in psychotic depression, Cappel *et al* (1978) also found that the cell-mediated immunity to HSV (as measured by *in-vitro* lymphocyte stimulation tests for *p*-hydroxyamphetamine and viral antigens) in these patients was similar to that in patients who had had acute HSV infections (8–14 days previously) and different from both controls and those in remission from an HSV infection (after 6–8 weeks). They concluded that there was an HSV infection or recurrence a few days or weeks before the onset of depression and, since there were no clinical signs of an HSV infection in these patients, that the reactivation could be occurring in the central nervous system. This work, however, was carried out in relatively small numbers of patients and does not appear to have been reproduced.

## Findings in Schizophrenia

Increased titres of a number of viral antibodies have also been reported in both the serum and cerebrospinal fluid (CSF) of schizophrenic patients (Torrey *et al*, 1978; Libíková *et al*, 1979; Albrecht *et al*, 1980; Gotlieb-Stematsky *et al*, 1981). Torrey *et al* (1982) further reported an increased prevalence of IgM antibody to CMV in the CSF of patients with schizophrenia and bipolar affective disorders and suggested that this indicated active infection, reactivation of latent infection or abnormally persistent antibodies from past infection. Rimón *et al* (1978, 1979), however, failed to find any increase in HSV, rubella or measles antibody from the CSF of schizophrenic patients, whereas we actually found significant decreases in the CSF/serum ratios of measles, mumps and rubella antibody titres and no change in HSV, CMV, varicella-zoster (VZV) and adenovirus antibodies in schizophrenia (King *et al*, 1985*b*). Since Gotlieb-Stematsky *et al* (1983) found lower antibody levels to HSV, CMV, VZV, Epstein–Barr virus (EBV), rubella and adenoviruses in the maternal and cord blood of infants with one or more 'risk factors' at birth (low birth weight, low Apgar score), we speculated that our findings might indicate impaired immunity and an increased perinatal susceptibility to viral infection, which might ultimately lead to schizophrenia in later life (King *et al*, 1985*a*). Although Fine *et al* (1985) reported no increase in nervous system diseases in 2570 subjects known to have been exposed to a variety of viral infections *in utero*, and followed up for up to 40 years, schizophrenia does not appear to have been looked for. Furthermore, Mednick *et al* (1987) found an increased risk of schizophrenia in those who had been exposed to a 1957 influenza epidemic during their second trimester of foetal life.

Interpretation of viral antibody titres is problematic and indeed titres for circulating humoral antibodies may be inappropriate if the immune response is cell mediated. Furthermore, viral infections might actually decrease these titres by immunosuppression or activation of suppressor lymphocytes (Behan, 1983). Indeed, an increased proportion of circulating suppressor/cytotoxic T-lymphocytes has been found in schizophrenia (DeLisi *et al*, 1982) and a decrease in the number and proportion of circulating T-lymphocytes in schizophrenia, including drug-free patients (Coffey *et al*, 1983). Antibody levels may also be influenced by the hormonal effects of cortisol (Kronfol & House, 1984; Baker *et al*, 1985) and androgens and oestrogens (Dunkel *et al*, 1985) on lymphocyte subpopulations. The latter could indeed account for the sex differences otherwise unexplained in one of our studies (King *et al*, 1985*a*).

In addition, impaired immunity in schizophrenia is also suggested by the report of generalised reductions of between 25% and 50% in sera and CSF levels of IgG, IgA and IgM immunoglobulins in chronic institutionalised patients (DeLisi *et al*, 1981). Although a subsequent study excluded a possible effect of medication, and confirmed low sera IgM levels in about 10% of acute psychiatric patients, this was not specific to schizophrenia (DeLisi *et al*, 1984). We found virtually no change in serum IgG levels in any psychiatric patients, but a 30% decrease in CSF IgG level in schizophrenics (King *et al*, 1985*a*,*b*).

Viruses can also cause altered or impaired immunity by inducing auto-immune reactions and, of course, an auto-immune hypothesis for schizophrenia has long been considered (Burch, 1964; *British Medical Journal*, 1967). Anti-brain antibodies have been detected in sera and CSF of schizophrenics but not in controls (Pandey *et al*, 1981). DeLisi *et al* (1985) have also found anti-brain antibodies in the sera of 18% of psychotic patients, although this was not specific for schizophrenia and artefacts remain to be excluded. Kelly *et al* (1987) found no differences between patients and control subjects for anti-brain antibodies in serum to a variety of areas of the brain. Interestingly, they were able to detect anti-brain antibodies in some apparently healthy subjects as well as patients.

We failed to find any increase in the IgG:albumen ratio in the CSF of schizophrenics (unpublished observations) and oligoclonal bands have not been found in either serum or CSF from schizophrenic or depressed patients (Roos *et al*, 1985). Although such bands are not an invariable accompaniment of viral disorders, these findings raise considerable doubt as to the relevance of *active* viral infection or the possibility of auto-immunity (as mentioned above) in the aetiology of psychoses.

Direct efforts to identify virus-like particles in CSF (Taylor *et al*, 1982; Mered *et al*, 1983) or viruses in autopsied brain have also been made and are continuing, but with disappointing results to date. Cytomegalovirus has not been detected in the autopsied brains of schizophrenics by either immunohistochemistry (Stevens *et al*, 1984) or DNA hybridisation (Aulakh *et al*, 1981; Taylor & Crow, 1986). Although HSV was not found by two of these groups (Stevens *et al*, 1984; Taylor & Crow, 1986), it had been reported in the autopsied brains of three of four elderly patients, one of whom had chronic schizophrenia, by Sequiera *et al* (1979) using *in-situ* hybridisation. We are currently screening the brains of 23 schizophrenics and 23 controls with 17 cloned virus probes by *in-situ* hybridisation (in collaboration with Professor I. V. Allen and Dr S. L. Cosby, at the Neuropathology Laboratory, Royal Victoria Hospital). So far our findings for measles, mumps and rubella have been negative. The significance of these findings is uncertain, however, since a virus may trigger abnormalities of the central nervous system and chromosomal abnormalities with clinical manifestations that persist long after the virus itself has been eliminated from brain tissue (Huppert & Wild, 1986).

Overall, it would seem that immune function may be slightly reduced in schizophrenia but that there is no clear evidence for this being of aetiological significance. Nor is there firm evidence for a particular virus being important in causation. Another proposed environmental factor has been obstetric complications (McNeil & Kaij, 1978; Lewis & Murray, 1987), but some evidence suggests these act only in already genetically vulnerable people (Parnas *et al*, 1982). The situation in relation to viruses in schizophrenia may be similar or they may even have their effects during pregnancy (Mednick *et al*, 1987). It would, however, seem unlikely that all cases of schizophrenia have a viral aetiology, although some may have.

### Epidemiological studies in schizophrenia

An important element in the viral hypothesis for schizophrenia has been the 'season of birth' effect, first described by Hare & Price (1968), who observed an excess of winter births of schizophrenic patients compared with neurotic patients. This finding was confirmed in a comparison of a national sample of schizophrenic patients with the general population in the United Kingdom, which revealed a 7% increase in births of schizophrenics in winter months (Hare *et al*, 1973). Similar results have been obtained in many countries, including some in the Southern Hemisphere, with winter-birth excesses of between 5–15% reported in most studies (Dalén, 1968; Parker & Neilson, 1976; Shimura *et al*, 1977; Torrey *et al*, 1977; O'Hare *et al*, 1980). Some have argued that it may be an artefact of study design (Lewis & Griffin, 1981), but the observation seems to stand up to more rigorous analysis (Watson *et al*, 1982). Seasonality of birth cannot readily be explained by current genetic models but could be explained if schizophrenia were due to a virus with a seasonal prevalence. Many viruses are more prevalent in winter and early spring, when a winter-born child may be at most risk of infection. However, such evidence as there is shows the relationship to be to excesses of seasonal infectious disease in the year previous to the schizophrenic births (Watson *et al*, 1984), suggesting a pre-natal rather than a post-natal effect.

In the absence of consistent findings implicating common viruses, the idea of schizophrenia as an infectious disease resulting from an unknown agent (Crow, 1983) was initially attractive. This 'contagion' hypothesis was based on epidemiological data (such as the 'season-of-birth' effect) and data on the family history that cannot readily be explained by a genetic model. Other support came from Kazanetz (1979), who found evidence of clustering of new cases of schizophrenia in apartment blocks in Moscow, suggesting a communicable disorder. The fact that concordance is higher for same-sex pairs of twins or siblings than different-sex pairs (Rosenthal, 1962) is also consistent with an infectious aetiology, since same-sex pairs are likely to spend more time together. Finally, reanalysis of data collected by Abé (1969) suggested that in monozygotic twins the morbidity rate for the cotwin was much greater in the first two years after onset of schizophrenia in the index twin and was particularly evident if the twins were living together at the time of onset of the illness (Crow, 1983).

However, further consideration of data comparing differences in age of onset and date of birth for schizophrenic sibling pairs supports neither the 'contagion' hypothesis nor the idea that age of onset is genetically determined (Crow & Done, 1986). Instead an ascertainment bias is revealed, because there is a tendency for data to be collected at the time of onset of illness in one sibling rather than at the time of completion of lifetime at risk for both. This results in an excess of early onsets in younger siblings being included in the available data. A further test of the 'contagion' hypothesis was our examination of the incidence of schizophrenia in psychiatric nurses, which was found to be no different from that in general hospital nurses (Cooper *et al*, 1987). Furthermore, attempts to transmit an infective agent from the brain tissue of schizophrenic patients to laboratory animals have so far been unsuccessful (Baker *et al*, 1983).

Interestingly, it is possible to interpret existing epidemiological and family history data as arguing against environmental events acting post-partum (Crow, 1984; Crow & Done, 1986). Some recent neuropathological findings are also more suggestive of events in the first and second trimesters of pregnancy being important (Jakob & Beckmann, 1986; Falkai & Bogerts, 1986).

### Immune response in stress and depression

Similar speculations about altered immunity in depression and physiological emotional disturbances have been made (*Lancet* 1985, 1987) and met with vitriolic disdain (Hall, 1985, 1987). Others have been more cautious and emphasised the importance of artefacts due to treatment variables (Albrecht *et al*, 1985; Denman, 1986). Decreased immune responsiveness has been reported in depression (Kronfol *et al*, 1983; Schleifer *et al*, 1984), bereavement (Bartrop *et al*, 1977), stress (Locke *et al*, 1984), and loneliness (Kiecolt-Glaser *et al*, 1984). Better controlled studies have failed to confirm an association with depression (Calabrese *et al*, 1986; Albrecht *et al*, 1985).

The detailed findings have been variable. For instance, Schleifer *et al* (1984) originally reported a diminished lymphocytic response to T-cell mitogens, decreased total T- and B-lymphocytes, and no change in proportions of lymphocyte subsets in severely depressed in-patients. In a subsequent study the number of T-cells was decreased but mitogen-induced lymphocyte response was unchanged in depressed out-patients (Schleifer *et al*, 1985). Neither DeLisi *et al* (1986) nor Amsterdam *et al* (1986) found any correlation between anti-EBV antibody and either depressive or manic symptoms, and we found non-significant increases in five viral antibody titres (including EBV) and decreases in three antibody titres in our patients with affective disorder (King *et al*, 1985*a*). Irwin *et al* (1987) linked severity of recent life events to a decrease in the activity of natural-killer (NK) cells in women whose husbands were seriously ill or had died within the previous six months, compared with women whose husbands were in good health. However, the severity of depression in these women rather than the severity of life events was more strongly associated with changes in T-cell lymphocyte subsets.

Murphy *et al* (1987) attempted to link changes in total lymphocyte numbers to cortisol hypersecretion by retrospectively comparing the values from routine haematological screening with dexamethasone suppression test (DST) results in 80 depressed patients. They found reduced lymphocyte numbers were more common in the unipolar than in the bipolar patients, but although an abnormal DST result was associated with a lower lymphocyte count in the unipolar patients, it was associated with higher counts in bipolar patients. Of historical interest here is that the earliest suggestion that plasma cortisol was elevated in depression was based on the indirect evidence of eosinopenia (Mann & Lehmann, 1952). The relationship between stress, cortisol and immunity is complex and controversial. Baker *et al* (1985) found that anxiety in medical students was associated with elevated serum cortisol levels and the proportion of circulating helper T-lymphocytes, and proposed that the latter was part of the physiological stress response, which might have important aetiological significance for a number of stress-related diseases, such as rheumatoid arthritis. Kronfol & House (1984), however, found no change in the proportion or ratio of helper to suppressor T-lymphocytes in depressed patients, but reduced lymphocyte response to mitogen stimulation. Stress scores and serum cortisol levels were also higher in the depressives, as was the total white blood cell count. Poteliakhoff (1985) has speculated on a converse relationship, namely that maladaption to stress associated with chronic fatigue *decreases* serum cortisol levels, which in turn enhance autoantibody formation and thereby the development of autoimmune diseases, such as rheumatoid arthritis; however, no direct evidence for this has been advanced. On balance, therefore, corticosteroids and stress seem to be associated with a decreased immune response. Whether this is clinically significant for depression or autoimmune diseases remains unproven.

Hall (1985) reminds us that lymphocyte responsiveness is immensely variable and that the changes reported in stress and depression are marginal. However, Breier *et al* (1987) have demonstrated a quite rapid, substantial immunosuppression using a metabolic stress test (infusion of 2-deoxy-D-glucose), which also causes increased sympathetic nervous system activity and increased cortisol secretion. The relationship between plasma cortisol and T- and B-lymphocyte numbers appears to be an inverse one (Ritchie *et al*, 1983), consistent with the findings of Kronfol & House (1984) rather than those of Baker *et al* (1985). Moreover, a clear circadian variation in levels of lymphocyte subsets has been identified (Bertouch *et al*, 1983; Ritchie *et al*, 1983).

Probable neurochemical inputs to the immune system are another factor often not considered when relating changes in function to psychiatric disorder. Beta-adrenoceptors are known to be present on lymphocytes, and there is some evidence for noradrenergic inputs to lymph nodes (Giron *et al*, 1980) and for other central nervous system inputs to the immune system (Fauman, 1982). Natural killer cell activity can also be mediated by $\beta$-adrenoceptors (Hellstrand *et al*, 1985). In depressive illness, marked alterations in noradrenergic functioning occur, particularly elevation of plasma noradrenaline levels (Cooper *et al*, 1985), and this may thus have subtle effects on the functioning of the immune system. It seems likely, therefore, that alterations in immune function in affective disorder are secondary rather than primary, result from a number of possible variables, and have uncertain immunological significance. Thus, attempts to link stress, immunity and disease in a simplistic manner are premature and unsupported by direct evidence at the present time.

## Conclusions

A viral aetiology for mental illness, proposing an elusive environmental agent, clearly remains an attractive hypothesis, but at present suffers from the same weakness as psychoanalytic theories in being incapable of refutation. The epidemiological evidence suggests that in schizophrenia environmental factors acting post-partum are not of aetiological importance (Crow & Done, 1986), but a pre-natal effect remains a possibility (Watson *et al*, 1984; Mednick *et al*, 1987).

The bulk of the evidence from immunological studies suggests that suppression of the immune response rather than enhancement occurs both in physiological states and in psychiatric disease. The magnitude of these changes is modest and their immunological significance is not yet clear. Furthermore, future studies must include reasonable numbers and be properly controlled for age and sex (King *et al*, 1985*a*), or else spurious results emerge, such as those initially reported for CMV in schizophrenia (Albrecht *et al*, 1980). It may be that under conditions of stress or depression there is, as is commonly believed, an increased vulnerability to infection, tumour growth and autoimmunity, but to go on to imply a role for psychological treatments, not only in what used to be known as psychosomatic disorders, but also in life-threatening disease including certain cancers (*Lancet*, 1987), is premature, borders on the absurd and brings no credit to psychological medicine.

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***Review Article***

# Which Depressed Patients will Respond to Electroconvulsive Therapy?

## The Search for Biological Predictors of Recovery

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A small yet significant minority of contemporary patients with endogenous depressive illness who are treated with electroconvulsive therapy (ECT) gain little or no benefit. It is argued that the use of clinical features alone may not improve the ability to predict outcome after ECT. Many biological measures have been used to attempt to identify depressed patients for whom ECT would be an effective treatment, but none has yet been shown to be superior to clinical predictors. Depressed patients show a wide range of physiological responses to the first treatment of a course of ECT. Of these physiological responses, estimations of seizure threshold and of the release of posterior pituitary peptides merit further investigation as putative predictors of recovery.

The best guide to the likelihood of recovery from depressive illness after electroconvulsive therapy (ECT) is the diagnosis itself. The classical symptoms of endogenous depressive illness predict a good response to ECT, while those of neurotic depression do not (Fink, 1979; Kendell, 1981; Hamilton, 1986). The well-known Medical Research Council (1965) investigation of treatments for depressive illness showed that 84% of patients suffering from endogenous depression improved with ECT. A small minority of patients with classical endogenous depressive illness, however, receive ECT with little or no benefit. Thus, there have been many attempts to identify biological measures which may select endogenously depressed patients who will respond well to ECT.

There are other important reasons for this interest. Firstly, there has never been agreement about the clinical boundaries of endogenous depressive illness. Secondly, Abrams (1982) has argued that there is now so little clinical variability among depressed patients who receive ECT that the prediction of outcome based on clinical features alone may not be feasible. Thirdly, the identification of biological predictors of recovery after ECT would provide clues about the mode of action of this controversial treatment. A fourth contemporary hope is that the identification of the characteristics of depressed patients who respond rapidly to ECT may form the basis of a subclassification of depressive illness. This subclassification might in turn advance understanding of the aetiology of certain types of depressive illness. This everyday clinical problem is thus complicated by crucial uncertainties about classification in psychiatric illness and its answer may have important implications for research into the aetiology of depressive illness.

### What are we trying to predict?

The prediction of treatment response is a continual concern for psychiatrists and their patients. Biological measures may help in a number of ways (Albala *et al*, 1984). It may be possible to identify depressed patients for whom ECT would be the most effective treatment; or to monitor the process of recovery and determine the optimal end-point for a course of ECT; or to detect, among patients who have successfully completed a course of ECT, those who are at high risk of relapse and in need of continuing supervision or vigorous continuation therapy. This review will be concerned chiefly with attempts to identify depressed patients for whom ECT would be an effective treatment.

### Biological measures as potential predictors of outcome

Early studies concentrated on biological measures made before patients received any ECT (Table I). The simplest strategy was to investigate a resting physiological measure such as the concentration of a substance in blood, or an electroencephalogram (EEG). A later strategy was to study the physiological effects of administered drugs. Funkenstein's test studied the effects of administered adrenaline and metacholine on blood pressure, and the sedation threshold test measured the effects of sodium amytal

TABLE I
*Biological measures made before ECT and investigated as potential predictors of recovery*

| |
|---|
| Resting electroencephalogram |
| Sedation threshold |
| Autonomic reactivity |
| Calcium |
| Cortisol |
| Monoamines and metabolites |
| Endocrine challenge tests |

TABLE II
*Physiological measures of the reaction to ECT investigated as potential predictors of recovery*

| |
|---|
| Seizure threshold |
| Seizure activity |
| Autonomic changes |
| Monoamines and metabolites |
| Anterior pituitary hormones |
| Posterior pituitary hormones |
| Post-seizure electroencephalogram |

on the EEG. Recent studies have used administered drugs or hormones in neuroendocrine challenge tests.

Although depressed patients who are treated by ECT are highly selected and share many clinical features, they show a variety of behavioural and physiological responses to ECT (Fink, 1979). The search for predictors of outcome may be more rewarding if based on reaction to the treatment. The clinical response to the first few treatments is a good guide to the likelihood of recovery (Price *et al*, 1978; Zorumski *et al*, 1986), and to be of value as a predictor, the measure employed must be informative after the first or second application of ECT. Table II lists physiological measures of the response to the first treatment of a course of ECT which have been investigated as potential predictors of outcome.

## Some methodological problems

Early attempts to identify predictors of outcome often included patients suffering from schizophrenia and neurotic conditions as well as patients suffering depressive illness. Many of the correlates of recovery were simply characteristics of depressed patients as opposed to schizophrenic or neurotic patients.

No studies have included a comparison group of patients who receive no treatment at all, and only a few studies have considered patients who received some other physical treatment such as antidepressant drugs. Thus, we do not know if putative predictors are markers of a specific response to ECT alone rather than markers of the likelihood of spontaneous recovery or a good response to any physical treatment for depressive illness. Indeed, Hobson (1953) noted the similarity between the clinical features he associated with recovery after ECT and those already noted to be associated with a favourable outcome of depressive illness before ECT was available. This methodological problem is more significant today now that drug treatments for depressive illness are more widely available and many patients treated by ECT have already failed to respond to antidepressant drugs.

There are important theoretical and practical difficulties in the measurement of clinical outcome. There is no agreed definition of recovery after ECT. There is debate about the quantitative improvement that is required, and about the timing of this assessment. When follow-up is extended beyond the period of hospital stay, the method of assessment may be unsatisfactory; for example, some recent outcome studies have relied on follow-up by telephone. The majority of patients with endogenous depressive illness do well in the short term after ECT, but there is a greater variability of outcome as the length of follow-up is extended. Recent outcome studies have found that less than one-third of patients remain well six months after ECT (Coryell & Zimmerman, 1983; Lipman *et al*, 1986*b*; Katona *et al*, 1987). This review will concentrate on contemporary studies which use operationally defined depressed patients and clear outcome measures.

## EEG studies

There is a higher prevalence of abnormal activity on the EEG among patients receiving ECT than in the general population (Mosovich & Katzenelbogen, 1948; Kennard & Willner, 1948). These abnormalities are more likely in older patients but show no relationship to clinical diagnosis. Some studies have found that patients with a normal (alpha) EEG record have a better outcome than patients with abnormal tracings, but this has not always been replicated.

Shagass (1954) estimated 'emotional arousal' by giving sodium amytal intravenously until the EEG showed an increase in beta activity, and this point was defined as the sedation threshold. Patients with low thresholds were usually suffering from psychotic depression and had a good prognosis with ECT. The inter-rater reliability of the test was low (Thorpe, 1962), and its usefulness as a predictor was not confirmed (Roberts, 1959).

During a course of ECT, the interictal EEG shows progressive reduction of the mean frequency and an increase in the mean amplitude. The degree of slowing is related to the number and frequency of seizures and, to a lesser degree, the types of current and placement of electrodes (Small *et al*, 1978; Fink, 1979). There is, however, great variability among patients in the amount, rate and persistence of EEG slowing after ECT, which only becomes prevalent after the third treatment. Roth *et al* (1957) were able to detect EEG slowing at an earlier stage of treatment after the injection of a standard amount of sodium thiopentone within 3–4 hours after a fit; however, they concluded that thiopentone-induced delta activity had only a small bearing on the immediate outcome of ECT.

### Autonomic reactivity

The Funkenstein test (Funkenstein *et al*, 1948) measured the changes in blood pressure to injected adrenaline and methacholine. Patients in whom a chill developed after methacholine and patients in whom blood pressure rose more than 50 mmHg after adrenaline and fell and remained low after methacholine improved after ECT. Although reviewers suggested the test merited further development (Rose, 1962; Thorpe, 1962), they also criticised it adversely because of its low reliability, its uncertain physiological significance and its failure to take account of the effects of age.

Prudic *et al* (1987) studied 34 depressed patients throughout a course of ECT and found no cumulative pattern in either heart rate or blood pressure after treatment. Cardiovascular changes were not related to treatment or outcome variables, and it seemed that only age and pretreatment heart rate were predictive of cardiovascular change.

### Monoamines and metabolites

The original catecholamine hypothesis of depressive illness (Schildkraut, 1965) arose from the observations that drugs causing depletion of brain noradrenaline produced depression, and drugs that increased or potentiated brain noradrenaline alleviated depression. Contrary to the original hypothesis, depressed patients often have increased plasma catecholamine concentrations. It has been suggested that the increase in plasma catecholamine concentration is associated with a vulnerability to stress (Cooper *et al*, 1985) or anxiety (Wyatt *et al*, 1971) or melancholia (Roy *et al*, 1985). No relationships have been reported between baseline plasma catecholamine concentrations and clinical outcome after ECT.

The principal metabolite of central nervous system noradrenaline is believed to be 3-methoxy-4-hydroxyphenylglycol (MHPG), which may be measured in urine. There is no relationship between the clinical response after ECT and the urinary excretion of MHPG (Sharma *et al*, 1986) or the cerebrospinal fluid (CSF) concentrations of the metabolites of noradrenaline, dopamine or serotonin (Aberg-Wistedt *et al*, 1986).

Plasma adrenaline and noradrenaline concentrations rise after ECT (Weil-Malherbe, 1955; Havens *et al*, 1959). Heightened sympathetic activity is not essential to treatment outcome, as the injection of barbiturate suppresses this response without reducing therapeutic efficacy.

### Calcium

The introduction of lithium resulted in the study of mineral metabolism during depression. Ottosson (1974) has argued that the changes in sodium, potassium and water metabolism are secondary to recovery from depression and are not a direct effect of ECT. Since disorders of calcium metabolism are associated with mood disorder, there has been particular interest in calcium metabolism during recovery from depressive illness. Successful treatment of depressive illness by either imipramine or ECT is associated with decreased urinary excretion of calcium (Flach, 1964), and a positive calcium balance (Fragalla & Flach, 1970). Carman *et al* (1977) found that calcium concentration falls in both the CSF and serum during a successful course of ECT, and reviewed mechanisms by which calcium might alter mood. ECT may alter the distribution of calcium in the brain (Barkai & Nelson, 1987). The dynamics of calcium metabolism during ECT merit further study, although these alterations are not specific to ECT and there is no evidence that serum calcium concentrations before ECT are useful predictors of outcome.

### Cortisol

Increased activity of the hypothalamic–pituitary–adrenocortical (HPA) axis is common in depressive illness. Elevated cortisol concentrations have been reported in the plasma (Gibbons, 1964), urine (Carroll *et al*, 1976*a*) and CSF (Carroll *et al*, 1976*b*) of depressed patients. Raised plasma cortisol concentrations are found in other psychotic illnesses and are not specific for severe depressive illness (Christie *et al*, 1986). Serum cortisol concentrations are weakly correlated with the severity of depression (Deakin *et al*, 1983; Whiteford *et al*, 1987), but there is no relationship between serum cortisol concentration before ECT and recovery from depression after ECT (Deakin *et al*, 1983).

### Endocrine challenge tests

Endocrine challenge tests are used in two ways in ECT research. First, patients who respond rapidly to ECT may have a common physiopathology identified by a specific pattern of endocrine dysfunction (Fink, 1979). The two most common endocrine challenge tests used to test this hypothesis are the dexamethasone suppression test (DST) and the thyrotrophin-releasing hormone (TRH) stimulation test. Secondly, neuroendocrine tests may be used to assess monoamine neurotransmitter function in depressed patients (Checkley, 1980). Such tests make use of the role of monoamines in the control of the release of anterior pituitary hormones. The availability of radioimmunoassays for growth hormone (GH) has enabled the control of the release of GH to be studied in detail.

#### Dexamethasone suppression test

A feature of the increased activity of the HPA axis common in depressive illness is a resistance to normal feedback inhibition on the release of cortisol. Indeed, Carroll *et al* (1981) recommended that resistance of the HPA axis to dexamethasone was a specific laboratory test for endogenous depressive illness. Early studies by this group had suggested that during successful treatment of depressive illness the DST results gradually approach normal values (Carroll *et al*, 1976*c*). Coryell (1982) found that patients treated by ECT who showed resistance of cortisol release to dexamethasone in the DST (i.e. DST non-suppressors) improved with ECT more than DST suppressors. Other small studies found that early normalisation on the DST (by the fourth to sixth treatment) was predictive of a good clinical response. Those patients in whom the DST results failed to normalise had a poor clinical outcome (Dysken *et al*, 1979; Greden *et al*, 1980; Albala *et al*, 1981; Papakostas *et al*, 1981).

Subsequent studies have challenged these early findings. In a study of nine patients, Decina *et al* (1983) showed that during and immediately after a course of ECT, cortisol levels after dexamethasone became elevated rather than depressed. The increase in cortisol release was independent of clinical response to ECT. Five further studies have investigated the value of the DST as a predictor of the short-term outcome after ECT in a total of 154 depressed patients (Katona & Aldridge, 1984; Lipman *et al*, 1986*a*; Modai *et al* 1986; Devanand *et al*, 1987; Fink *et al*, 1987). All these studies used operationally defined groups of depressed patients and comparable definitions of DST non-suppression, and categorised patients by outcome. There was no evidence either individually or collectively that DST status immediately before ECT was predictive of short-term outcome after ECT. Four subsequent studies have investigated the relationship between DST status and clinical outcome six months after treatment with ECT in a total of 130 depressed patients (Coryell & Zimmerman, 1983; Lipman *et al*, 1986*b*; Fink *et al*, 1987; Katona *et al*, 1987). There was no difference in outcome between initial DST suppressors and non-suppressors. The first two studies found that persistent non-suppressors had a better clinical outcome than did the initial non-suppressors who normalised after ECT, but this finding was not confirmed by the later studies. A confounding factor, however, was that the timing of the final DST was not standard.

These results may seem disappointing in view of early enthusiasm about the value of the DST as a predictor of clinical response to antidepressant treatment. Recent reviews, however, have found that DST status adds little to the prediction of short-term antidepressant response (e.g. Arana *et al*, 1985). Coryell (1986) suggested that the effect of ECT on the diencephalon may invalidate the DST as a marker of clinical response. Lipman *et al* (1986*b*) supported the view of Abrams (1982), who felt that once depressed patients were selected for ECT, there was not enough variability in this sample from which to predict outcome. Certainly, patients selected for ECT are not typical of endogenously depressed patients; for example, they have a higher prevalence of DST non-suppression and a greater prevalence of psychosis, and many will have failed to respond to antidepressant drugs. Patients included in studies involving the DST are even more highly selected because patients with significant weight loss, physical illness, personality disorder, and substance abuse are excluded.

#### TRH stimulation test

In 1972, two groups reported that a proportion of depressed patients have a blunted thyroid-stimulating hormone (TSH) response to TRH (Prange *et al*, 1972; Kastin *et al*, 1972). These reports stimulated a search for treatment-associated changes in the TRH stimulation test during treatment. Most of this work concerned treatment with antidepressant drugs. However, Coppen *et al* (1980*b*) reported that there was a non-significant reduction in the TSH response to TRH in five patients after ECT. They did not report any association between TSH release before ECT and outcome. Papakostas *et al* (1981) tested seven patients before and after ECT and found no relationship between the TRH test and clinical outcome; however, as the authors admitted, their sample was too small to draw any conclusions. In the largest study to date, of 23 patients with major depressive disorder, Decina *et al* (1987) confirmed that the peak TSH response to TRH was decreased after ECT. This effect was consistent across individuals and was not related to clinical outcome. There was no difference between the mean TSH response to TRH in the responders and non-responders before ECT. Unfortunately, data are not provided on individual patients, although the authors state that the test has no predictive value. Kirkegaard & Faber (1986) found that a blunted TSH response was associated with an increased serum concentration of free thyroxine.

The TRH stimulation test may be useful in research to detect physiological changes during a course of ECT. The usefulness of the test in identifying depressed patients who will recover with ECT has not been proven, but must be limited because only 25–30% of euthyroid depressed patients have a blunted TSH response to TRH (Albala *et al*, 1984).

### Neuroendocrine tests of monoamine function

Drugs which stimulate specific monoamine systems and release GH from the anterior pituitary have been used to study the mode of action of ECT (Cowen, 1986). Although there is evidence from animal studies that repeated electroconvulsive shocks result in functional changes in brain monoamine pathways (Grahame-Smith *et al*, 1978), studies in depressed human beings have produced conflicting results. Neuroendocrine responses are complex and there are many steps between the administration of a drug and the measurement of a hormone response in plasma. Three drugs have been used in challenge tests in depressed patients receiving ECT. Clonidine (alpha-2 agonist), apomorphine (dopamine agonist), and amphetamine (non-specific monoamine agonist) stimulate the release of GH. Although Costain *et al* (1982) found a significant increase in the GH response to apomorphine after a course of ECT (thus supporting the hypothesis that ECT produces an enhancement of dopamine-mediated responses in the brain), this finding was not confirmed by Christie *et al* (1982). Costain *et al* (1982) noted that they had excluded from their study patients with a high basal concentration of GH, and when such patients were included in the analysis, the increase in apomorphine response following ECT was no longer significant. Slade & Checkley (1980) found no change in the release of GH by either clonidine or methylamphetamine in depressed patients after a course of ECT.

Plasma prolactin concentration is increased by the administration of TRH. Serotonin is the transmitter implicated in this stimulation of prolactin release. Coppen *et al* (1980*a*) found that prolactin release after TRH was increased after ECT; however, there was no association between prolactin release before ECT and clinical recovery. The release of prolactin may be inhibited by apomorphine, which is thought to be mediated by dopamine-containing neurones. Balldin *et al* (1982) found that a course of ECT enhanced the inhibition of the release of prolactin by apomorphine. There were no correlations between serum prolactin concentrations before or after apomorphine and clinical recovery after ECT.

The interpretation of such challenge tests is complex. For example, the release of GH is influenced by age, ovarian function, time of day, baseline concentration, alcohol, and concomitant psychotropic drug therapy (Checkley, 1980). Specific agonists or antagonists to monoamine receptors in the central nervous system may be of value in research, but with interpretation confounded by so many variables, they have no established role in clinical practice.

## Seizure threshold

The traditional view of the goal of ECT is that it is to elicit a generalised tonic clonic seizure of adequate duration, delivering the minimum possible intensity of electrical current. This recommendation derives from research suggesting that the antidepressant effects of ECT are tied to seizure elicitation, whereas increasing the stimulus intensity produces unnecessary cognitive side-effects (e.g. Ottosson, 1960). Seizure threshold, defined as the minimum electrical stimulus necessary to elicit adequate generalised seizures, varies 12-fold among drug-free depressed patients (Sackeim *et al*, 1987*a*). The practical implication of this finding is that in fixed-stimulus ECT, patients with a low seizure threshold can receive electrical stimuli many times greater than that necessary to elicit a generalised seizure. This may increase the degree of cognitive side-effects substantially. Patients with a high seizure threshold will have shorter seizures than patients with a low threshold (Sackeim *et al*, 1987*b*). This led Sackeim and colleagues to investigate the relationship between seizure threshold at the start of a course of ECT and clinical outcome. Non-responders to bilateral ECT had a mean seizure threshold almost twice that of responders. There was no difference in seizure threshold between responders and non-responders to titrated right unilateral ECT (Sackeim *et al*, 1987*b*). The efficacy of titrated ECT (i.e. the use of the minimum electrical stimulus to elicit a generalised seizure) has not been assessed; but the effects of seizure threshold on outcome and cognitive side-effects clearly merit further study.

### Measures of seizure activity

There is a "general belief that convulsive activity in the brain is the crucial ingredient" of ECT (Kendell, 1981). The seminal work of Ottosson (1960, 1962) is often cited as evidence. Ottosson demonstrated that seizures shortened by the administration of lidocaine were less efficient in relieving depressive illness than self-limited *grand mal* seizures. It is less commonly repeated that Ottosson (1962) found that the duration of the *grand mal* seizure had no significant relationship to therapeutic efficiency:

> "It seems, therefore, to be of no importance whether a person develops long or short *grand mal* seizures, the essential thing being that they are *grand mal* self-limited seizures."

There may be a range of electrophysiological response to ECT, from the so-called 'missed seizure' where there is a failure to induce any epileptic activity; through types of minor seizure similar to *petit mal*; to classical tonic clonic generalised activity (Small *et al*, 1978). There is rough agreement about what constitutes an adequate tonic clonic seizure. The proposed definitions vary with the method used to monitor seizure activity, namely, 30 seconds of generalised muscle activity (d'Elia *et al*, 1983), 25 seconds of muscle activity in a forearm isolated from the muscle relaxant by a tourniquet (Fink, 1979), or 30 seconds of epileptic activity on EEG (Fink, 1979). The American Psychiatric Association (1978) recommended that "a seizure lasting less than 25 seconds may not be adequate"; observation alone, the tourniquet method, and EEG monitoring were all practical methods to ensure that seizures were adequate.

There is only circumstantial support for these definitions. For example, several authorities cite the work of Small *et al* (1978) as support for a minimum seizure duration of 25 seconds. In fact, these authors did not define an adequate seizure but noted that minor seizures tended to last less than 25 seconds, and were not followed by electrical silence or a phase of delta wave activity on EEG. There is now evidence that there is no relationship between individual seizure length (measured by observation or EEG) and clinical change during a course of ECT (Weiner *et al*, 1983; Rich & Black, 1985; Zorumski *et al*, 1986). It may not be feasible to define a minimum length for a therapeutic seizure, as time alone takes no account of the degree of spread of seizure activity over the cortex or throughout the brain. This is a debate which merits further research.

Generalised tonic clonic seizures are an essential component of ECT and thus it is important to ensure that such a seizure occurs at each ECT treatment. The induction of satisfactory cerebral seizures does not, however, guarantee that a course of ECT will be successful. There is no correlation between individual seizure length and clinical outcome and thus seizure length cannot be used to predict recovery.

### Release of anterior pituitary hormones

The effects of ECT on temperature control, appetite, weight and autonomic activity have long implicated the hypothalamus in the physiology of ECT (Fink, 1979). A convenient means to study at least some aspects of hypothalamic activity is by the measurement of the release of anterior pituitary hormones which are released under the control of the hypothalamus. The popularity of this approach increased with the knowledge that neurotransmitters implicated in the pathophysiology of depressive illness (serotonin, noradrenaline and acetylcholine) were also involved in the regulation of the hypothalamic–pituitary system. Thus the precise extent and timing of anterior pituitary hormone release after ECT may also provide information about the effects of ECT on neurotransmitter function.

The most consistently reported endocrine effect of ECT is a rapid increase in plasma prolactin concentrations, reaching a peak 10–15 minutes after treatment. However, simulated ECT also increases plasma prolactin concentration twofold (Deakin *et al*, 1983), which suggests that prolactin release may occur as a response to the stress of the ECT procedure. Balldin (1982) reported that the increase in plasma prolactin concentration after ECT correlated with the length of seizures estimated by clinical observation, but this has not been confirmed (Aperia *et al*, 1985; Scott *et al*, 1986). The extent of the increase in plasma prolactin concentration at the time of the first treatment was unrelated to the extent of clinical recovery after ECT in two studies (Deakin *et al*, 1983; Scott *et al*, 1986). However, Abrams & Swartz (1985) reported that in 16 male melancholics, free of drugs which might affect plasma prolactin concentration, there was a correlation between a large prolactin response to ECT and a slow treatment response.

Plasma concentrations of adrenocorticotrophin and luteinising hormone also rise after ECT, but the extent of these increases is not related to clinical improvement (Whalley *et al*, 1987). The effects of ECT on plasma concentrations of growth hormone and TSH have been disputed. There is great variability in the effects of ECT on the release of growth hormone in different patients, but the effect of the first ECT on growth hormone release is not related to the extent of recovery (Scott *et al*, 1986). Dykes *et al* (1987) have clarified the effect of ECT on the release of TSH. The release of TSH after ECT was closely correlated with the extent of seizure activity measured by EEG, and only occurred consistently when seizures lasted at least 30 seconds.

Several groups have suggested that endogenous opioids may be involved in the mode of action of ECT. A research strategy to assess the activity of endogenous opioids is to measure plasma concentrations of beta-endorphin which is released from the anterior pituitary. ECT produces a transient increase in plasma immunoreactive beta-endorphin concentrations (Alexopoulos *et al*, 1983; Misiaszek *et al*, 1984), although the time course of this increase has not been well described. In a study of nine depressed patients, Weizman *et al* (1987) found that the effect of the sixth ECT on plasma beta-endorphine concentrations was twice that of the first ECT. There are no reports of any correlation between the extent of the release of beta-endorphin and clinical recovery.

In summary, the neuroendocrine effects of ECT may be a correlate of stress, seizure activity or the antidepressant effect of ECT. The release of anterior pituitary hormones after ECT has not consistently correlated with the antidepressant effects of ECT, and is unlikely to be useful in the prediction of clinical outcome. The use of EEG-monitored ECT may provide further information about which of these endocrine responses are correlated with seizure activity itself.

## Release of posterior pituitary hormones

The posterior pituitary (or neurohypophysis) releases two peptide hormones, arginine vasopressin and oxytocin, which are both synthesised in association with a neurophysin peptide which is released mole for mole with its hormone. Measurement of plasma neurophysin concentrations therefore provides an accurate guide to hormone release, with the advantages of easier detection and longer half-life. Whalley *et al* (1987) found that ECT stimulated an increase in plasma concentrations of both the vasopressin-associated neurophysin (hNpI) and the oxytocin-associated neurophysin (hNpII). This hormonal pattern was not found in a comparison group of surgical patients undergoing cholycystectomy. This small study suggested that the rise in plasma hNpII concentration after the first application of ECT was correlated with the extent of recovery from depressive illness. This correlation was confirmed in a subsequent study of 25 depressed patients (Scott *et al*, 1986). The peak hNpII response to ECT in the group with a good outcome at two months was three times that in the poor outcome group. One explanation of this finding would be that the release of hNpII is a sensitive correlate of seizure activity in the midbrain, and that greater seizure activity there is associated with a better response to ECT. A further study has confirmed that the hNpII response to the first ECT is correlated with outcome (Scott *et al*, in preparation), but has found no association between the release of hNpII and seizure activity measured by EEG. The extent of the rise in hNpI was not related to clinical outcome at two months. The association between hNpII release and clinical improvement is unexplained, but the predictive value of this test merits further study. Unfortunately, the assay of neurophysins is a specialised technique which is unlikely to become widely available.

## Conclusions

The majority of contemporary depressed patients selected to receive ECT will do well in the short term, but a small yet significant minority will gain little or no benefit from this controversial treatment. Careful assessment and diagnosis of endogenous-type depressive illness remains the single most important step in the selection of depressed patients for ECT. Once depressed patients are selected to receive ECT, the diagnosis of endogenous depressive illness does not guarantee recovery (Coryell & Zimmerman, 1984). Weight loss, early morning wakening and somatic delusions may be the clinical features of endogenous depressive illness which best predict a good outcome after ECT (Carney *et al*, 1965). There are, however, major methodological limitations to such clinical prediction studies. Indeed, Crow *et al* (1984) have argued that the only consistent clinical predictor of a specific response to ECT is the presence of delusions. It has been argued that the use of clinical features alone will not improve the ability to predict outcome after ECT. Consequently, there have been many attempts to identify biological measures which may select depressed patients who will respond well to ECT.

There have been few recent studies which have compared clinical and biological measures in the selection of patients for ECT. Katona *et al* (1987) found that the Newcastle ECT Predictor Scale (Carney *et al*, 1965) was useful in predicting both immediate and six-month outcome, but DST status was unsuccessful in predicting either outcome in 26 depressed patients. There are no physiological measures or tests which are superior to clinical criteria in the selection of depressed patients for whom ECT would be an effective treatment.

Depressed patients have a wide range of physiological responses to ECT. Exposure to ECT itself may provide a better guide to prognosis, in much the same way that a dynamic hormone challenge test is more informative than the estimation of a random hormone concentration. The most important physiological interaction between the patient and the ECT stimulus is that a self-limited tonic clonic seizure occurs, and this must be confirmed by the attendant psychiatrist. The present recommendation that the seizure must last at least 25 seconds is an arbitrary one. Further study is necessary to clarify the minimum requirements for a successful seizure. The relationship of initial seizure threshold to clinical response and cognitive side-effects merits further study.

Although a generalised tonic clonic seizure is an essential component of successful ECT, this is not always sufficient. Endogenously depressed patients can experience satisfactory seizures and yet fail to recover with ECT. The only physiological measure at the first use of ECT which has been shown to correlate with recovery is the release of hNpII (the oxytocin-associated neurophysin). It is not known if this putative predictor is a marker of a specific response to ECT alone rather than a marker of impending spontaneous recovery or a good response to any physical treatment for depression. Unfortunately, at present the estimation of hNpII concentrations requires a sophisticated assay which is not available for widespread clinical use. The nature of the association between the release of hNpII and recovery after ECT is unknown and merits further study. There is a need for studies which compare the predictive power of clinical and physiological measures in contemporary depressed patients selected for ECT.

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**Lecture**

# As the Years Go Rolling By
## Drinking Problems in the Time Dimension*

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Research which tries to understand human experience within the time dimension is entering difficult and uncomfortable territory. Long before the first prospecting research worker arrived on this scene with his questionnaires and statistical methods, creative writers had been exploring the same terrain. Take poetry, for instance. When poets write about the passage of time the visions which they conjure seem nearly always to carry menace. An image offered by Yeats exactly captures the sense of helplessness and haplessness which we may all sometimes experience under the pressure of passing time:

The years like great black oxen tread the world.
And God the herdsman goads them on behind.
And I am broken by their passing feet.

The imaginative tracking of characters and characterisation through time and circumstance is one of the richest accomplishments of the novelist – Proust and Powell come readily to mind. Autobiography and some great biographies (Gittings on Keats or on Hardy, for instance) can marvellously reveal the processes of human change and growth (Howe, 1982).

Psychoanalysis is also part of the backdrop to scientific endeavour, and analysts have explored this temporal terrain with great boldness. Such figures as Freud, Jung and Ericson are among the key contributors who have each in different ways attempted to describe the sequences and processes of childhood or adult development (Vaillant, 1977).

Psychoanalytical conjectures have been followed by attempts at more precise approaches to life course studies. Efforts have been made to trace the roots of what is now often termed "life-span developmental psychology" (Baltes *et al*, 1980) back to the late eighteenth century, but as an organised body of endeavour this line of work only gained coherence in the 1970s (Lidz, 1976; Kagan, 1980; Mednick & Baert, 1981; Honzik, 1984). Investigators within this tradition are less likely to embrace grand theories and seductively pleasing descriptions of fixed developmental sequences than were the analytical founding fathers. They would more probably warm to the following statement by a historian, H. A. L. Fisher:

> One intellectual excitement has been denied me. Men wiser and more learned than I have discovered in history a plot, a rhythm, a predetermined pattern. These harmonies are concealed from me. I can see only one emergence following upon another as wave follows wave, only one great fact with respect to which, since it is unique, there can be no generalisations . . . the play of the contingent and the unforeseen.

This attempt to delineate something of the complex heritage which provides the deep background to the immediate scientific concerns should not be dismissed as just some kind of grandiloquence, or the routine pomposity expected of the eponymous lecture in its opening paragraphs. Investigations of the type which will be discussed shortly must as best possible be scientific, but in many ways they are dealing with the same issues as those with which poets, novelists, biographers and historians have for far longer sought to engage. As much can be learnt about drinking from reading Malcolm Lowry's *Under the Volcano* (Lowry, 1947) as can be gained from perusing a whole shelf of textbooks. The scientist's phrase "negative life events" is little more than a pale and euphemistic rewording of Yeats's image of "great black oxen". Science is shaped by the metaphors of its parent culture. Whatever the background, scientific discipline, or degree of enthusiasm for the hearing of secret harmonies, the research worker who adopts the longitudinal or developmental approach to the study of normality, deviance or disease, does so, however, because of a belief that the years have more to teach about the human condition than can ever be learnt from one mere transient encounter with subject or sample. One of the issues to which it will be necessary to return later is the extent to which the attempt to make science of longitudinal human experience may actually exclude in its formality the close understanding of individual life processes to which it is supposedly dedicated – the degree to which life is always beyond science.

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But what bearing does any of this background have on next week's ward round, on this evening's encounter in the Emergency Clinic, on Monday's lecture in the Nurses Training School, on the contents of the MRC Psychiatry examination, or on conversations in the Maudsley canteen? A kindly critic, a social scientist studying as participant observer the everyday reality of the psychiatric culture rather than what is to be found in the libraries or in our rites of ancestor worship, might well conclude that all too often the reality is that psychiatrists work within a short-term view of the human condition, while the deeper questions relating to career, life trajectory, the processes which stultify growth, or the extraordinary human potential for change over time are devalued or discounted. It is too often as if the professionals liked to hand around still photographs but were reluctant to visit the moving picture show. Psychiatry has lost something of the sharp edge of excitement which ought to attach to the challenge of trying to understand life as being in its very essence and definition a longitudinal business. The 'Prognosis' heading in the well-contrived case formulation is all too often a ritualistic bet placed by a punter who will never know what happens to his horse around the corner. Long before the first furlong has been covered or the first fence taken that young psychiatrist will have written the hand-over note and rotated to the next six months of brief encounters.

### A doorstep in Deptford

Let's now shift into a different gear and move from discussions of the abstract to a focus on one of the most pervasive images of any run-down area of a big city – the drunk in the street. The sketch which follows is based in reality but details have been altered to conceal the subject's identity.

The year is 1968. At 11 p.m. on a winter's night a 45-year-old out-of-work carpenter, clad in what was once a smart blue suit, is lying collapsed and dishevelled in Deptford High Street, a poor area of South East London. His legs sprawl across the pavement but he supports his back against the door of a shop. He swigs from a bottle which he holds in one hand and calls out in drunken and inarticulate fashion to late-night passers-by, who while stepping round his legs resolutely pretend that he is invisible. Shortly after midnight two vagrants pause to go through his pockets and remove his wallet. When he protests, they smash him in the face and take his bottle away for their own use. At about 2 p.m. the following afternoon he turns up in a sorry state at the Maudsley's Emergency Clinic. He is already known to the hospital because he was discharged from the Alcoholism Treatment Unit three weeks previously on account of his persistent drinking while an in-patient. So there he now sits in the doctor's office, his body shaking with the mounting symptoms of severe withdrawal, his face bruised from the previous night's beating, his breath reeking of stale liquor, his whole appearance speaking to degradation and maudlin despair. What he says to that doctor is facile and unconvincing. He blames his plight angrily and repeatedly on his wife – "She should never have left me." Strangely and rather gratuitously he insists that his shakes are due to influenza. Yet he beseeches to be taken back into hospital straight away – "Just give me one more chance doctor and I won't let you down."

Beyond that still frame and if the film is run forwards, what happens next? What will befall either patient or doctor out of sight and around their next corners – a year, or ten years after the encounter which we have just witnessed? In short, what price the longitudinal perspective?

Any single case is atypical and most patients with drinking problems will never approach the sad and extreme plight of this particular man. And yet that one story is of wide significance in so far as it poses the fundamental questions with which longitudinal research in this area must be concerned. One of these questions is why, out of the 20 lads who back in 1928 were this patient's classmates in infant school, only he would have gone on in later life to have been entrammelled in drinking – the 'origins of alcoholism' puzzle. That is an issue of great importance which has over recent years attracted substantial research attention (McCord & McCord, 1960; Fillmore, 1975; Jessor & Jessor, 1977; Vaillant, 1983; Fillmore, 1986), but it is not the section of the drinking career on which this paper is going to focus. It will instead concentrate on questions of what happens to patients once they have developed manifest drinking problems.

### Longitudinal studies on drinking

It is of course arbitrary to segment the total drinking pathway into before and after the problem becomes frankly evident and the patient comes for help. There is, however, in this area a substantial research literature with by far the greater part offering only a 12-month or perhaps a two-year view of follow-up. These reports have sought to determine which patients have in the short term done well in treatment, and treatment efficacy is taken as the central question (Emrick, 1975; Miller & Hester, 1986). Although these studies are of value (specially if the design allows for controlled comparisons to be made between different approaches), they are also beset by distinct limitations. One year constitutes a very short section of the total pathway forward. Furthermore, the basic assumption on which this research is predicated is constrained to the point of tunnel vision if it assumes that treatment influences are so paramount that all that has to be asked is "Does treatment work?", with every other influence in the interactive field discounted. Research, therefore, stands in need of longitudinal studies which attempt to place treatment experience within the enormously important totality of the ebb and flow of what happens to that person's life – the job promotions and the redundancies, the broken marriages and the new loves, children grown up, the death of parents, brain damage or growth in personal maturity, accidents and inheritances, boom and slump, the tread of the oxen. Within that longitudinal perspective it is absurdly medico-centric to suppose that 'treatment efficacy' is the single important question. Treatment is more accurately conceived as being at best a timely nudge or whisper in a long life course.

Up to the present only a handful of interview studies running beyond the two-year period have been reported in the alcoholism research literature (see Vaillant (1983) for a short bibliography). The Addiction Research Unit's long-term follow-up project is not uniquely important but its results can be taken as illustrating several core aspects of this question as to "What happens to alcoholics?". The project originally involved a one-year follow-up (Edwards *et al*, 1977; Orford & Edwards, 1977); it was later extended to the two-year mark (Orford *et al*, 1976); it was then taken forward to the ten-year point (Edwards *et al*, 1983) and it is continuing.

It may be useful firstly to describe the essential framework of the study. Between March 1968 and November 1970, 99 men referred for drinking problems were recruited into a controlled trial of 'treatment' versus 'advice'. They were consecutive attenders at the Maudsley out-patient department, and were selected on the basis of their willingness to participate in the trial and the absence of serious mental or physical illness. The reason for restricting patients to those who were currently married was to enhance the availability of independent information at 12-month outcome. The sample was limited to men for purposes of homogeneity. With the trial completed, these subjects were then taken into a long-term follow-up. No sample is likely to be in a statistical sense representative of the total universe of potential patients, but give or take a little, this cohort of 99 men can probably be taken as mirroring with reasonable accuracy the generality of married men with drinking problems who arrived between those years on any British treatment centre's doorstep. Among the first ten subjects registered in this series was the man who collapsed in Deptford High Street.

## Ten-year follow-up:

### The overall picture

Let's start with the overall outcome picture (Edwards *et al*, 1983). At ten-year follow-up 18 of the original 99 subjects had died. This represents a death rate of two and a half times that which would have been expected from an age-matched comparison – a fairly stark finding in its own right. Thirty-eight per cent of the survivors had made a suicide gesture or attempt during the follow-up period.

At or around the ten-year anniversary, 68 of the surviving 81 patients were personally interviewed by the research team in great detail. Interviews were tape-recorded and lasted 2–3 hours. A mixture of self-completion questionnaires, structured questioning and free probing was employed. Information was obtained whenever possible from an independent informant and extensive use was made of record searches. Thus with 68 patients interviewed and 18 dead, the team knew what had happened to 87% of the original cohort. On the remaining 13 patients with whom personal interviews were not accomplished, information of various degrees of completeness was obtained by letter, from informants, or from records only.

There are two ways of expressing the overall results. One is to take the 68 interviewed patients as the base and leave the 13 subjects who were not interviewed out of the reckoning. That strategy would give a distortedly favourable picture. The second approach is to include the uninterviewed subjects in the unfavourable outcome category: this gives a slightly too pessimistic picture but is probably a fairer reflection of the realities than the first approach. Tabulations based on each of these alternative assumptions are given in Table I. The operational definitions for the outcome categories have been given in detail elsewhere (Orford & Edwards, 1977), and are based on drinking behaviour over the final 12 months of the ten-year study.

Focusing on the right-hand set of figures, the evidence is that ten years after the initial case intake not less than one-third of these patients were doing well. One is, however, more uncomfortably forced to note that fully one-half were still faring badly. Add to that the death rate and the fact that 43% (29) of the 68 interviewed patients had ended their

TABLE I
*Drinking during final 12 months to ten-year follow-up: operational definition of categories as in Orford & Edwards (1977)*

| *Outcome categories* | *Distribution between categories (%)* | |
|---|---|---|
| | *Uncorrected (n = 68)* | *Corrected (n = 81)* |
| Good | 40 | 33 |
| Equivocal | 13 | 11 |
| Bad | 47 | 56 |

marriages by the follow-up point, and even this preliminary set of data rather grimly suggests that if one looks around a corner or two these patients must be seen as suffering from what is dominantly a chronic and malign condition. The ten-year view suggests that alcohol problems need to be taken very seriously indeed.

## The 'return to normal drinking' question

Before going further there is one other aspect of these overall findings which deserves scrutiny. Among the 27 subjects in the 'good' outcome category were seven who during the 12 months prior to follow-up had shown sustained social drinking rather than abstinence. These findings bear directly on the controversy as to whether alcoholics can return to normal drinking – a question which was first effectively posed by Davies (1962).

At a superficial level the present findings could be read as simply confirming the contention that a small proportion of diagnosed alcoholics can in the long term return to a controlled pattern of drinking. A vital additional insight comes, however, from examination of the degree to which these seven patients were ever dependent on alcohol. Since the time when Davies wrote his paper it has become clear that rather than viewing alcoholism as an all-or-none condition (you have it or do not have it), it is better to think of alcohol dependence as a condition which exists in degrees – you can have a little or a lot of it (Edwards & Gross, 1976; Edwards, 1986). This formulation emphasises the reality of alcohol dependence as a tangibly important clinical condition while at the same time setting up the demand that methods be devised for measuring the *intensity* of any patient's dependence.

One approach is provided by a self-completion inventory called the Severity of Alcohol Dependence Questionnaire, or SADQ (Stockwell *et al*, 1979). This gives scores from 0 to 60. Scores below 30 indicate dependence of not more than moderate degree. The crucial research finding is that six of the seven patients in the social drinking outcome group had never experienced dependence of SADQ greater than 30. The seventh patient was drinking at a low level only because brain damage had led to loss of tolerance to alcohol.

These findings thus throw considerable light on the original controversy and go some way toward resolving the question which it set. High alcohol dependence probably makes long-term return to normal drinking very unlikely, while with more moderate dependence that possibility may for some patients be a reasonable choice (Edwards *et al*, 1986). These results not only give an indication of the potential power of longitudinal research – the ability of the years to teach more than comes from the chance encounter – but they also give a preliminary hint as to the potential significance of the dependence concept as an explanatory idea.

## Patterns of drinking over ten years

What has so far been discussed is outcome in terms of drinking behaviour in the tenth year. That picture must be supplemented by information on what happened to drinking over the whole ten-year period (Duckitt *et al*, 1985; Taylor *et al*, 1986*a*). Here there are a number of questions to be asked. For instance, if outcome is examined serially for each of the ten years, does it appear that for the group taken as a whole there is on average continued improvement, further deterioration, or just a steady state?

Figure 1 deals only with the 68 patients on whom detailed interview information was obtained. For each of the ten years, group data are presented

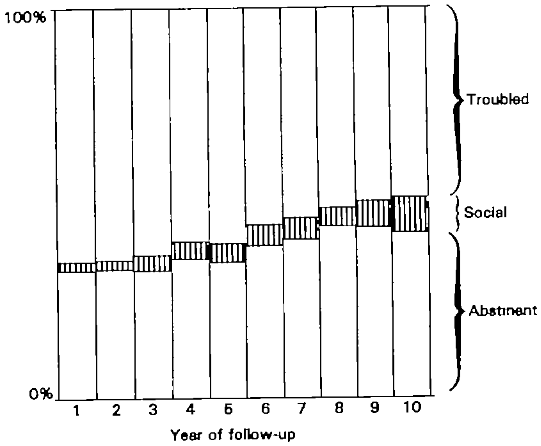

FIG. 1.

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on percentage of time spent in each of three categories which are defined in this instance as 'troubled', 'social' and 'abstinent' (Taylor *et al*, 1986*a*). An optimist would rightly point out that there is certainly no evidence for a progressive slide toward more percentage time spent in the 'troubled' category. The numbers in the 'social drinking' category are only ever small but tend to increase over time. A realist would, however, wish to note that the temporal changes are encouraging but not very large. The safest conclusion to be drawn from Fig. 1 is that no very dramatic overall group changes occur over the whole ten years.

The important question of stability or instability in drinking behaviour is taken a stage further in Fig. 2. Instead of examining matters only in group terms, this looks at individual behaviour. It shows the proportion of time spent by each of the 68 patients in each of the three drinking categories over the total ten-year period. What this diagram reveals is in essence as follows.

Firstly, there are a minority of patients who for the whole ten years remain strictly within the one category. Thus 13 out of the 68 (19%) spent the entire period unremittingly in troubled drinking. In contrast, three subjects were abstinent for the entire period, while just one persevered with unbroken social drinking.

The second conclusion is that the great majority of subjects arranged themselves somewhere directly along the bottom line of the triangle and thus partitioned their time in various proportions between 'abstinent' and 'troubled'. The dominant picture of individual behaviour in these ten-year terms is thus not of utterly bad or continuously brilliant drinking outcome but of an admixture of the two categories.

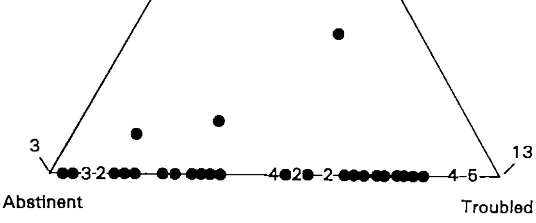

FIG. 2.

Thirdly and lastly there is a scattering of individuals who lie off the bottom line and thus partition their drinking not between two but between three categories – they spend some part of their time in social drinking.

Let's at this point stand back from the detail and summarise what these findings so far appear to indicate. The earlier results force the realisation that drinking problems of the type which brought these 99 men by various pathways to the doors of a hospital potentially represent a life-threatening condition of worrying chronicity. Additionally, the data which have now been examined invite the conclusion that behind the overall statistics lies evidence of a multiplicity of possible outcome patterns – some patients do brilliantly and soberly, rather more continue with an unremitting problem, while the majority show a mixed pattern. It is certainly wrong to conceive of outcome only in terms of stark and extreme alternatives.

## Outcome: looking for order

Having established that there is considerable mixture and variation in drinking behaviour over time, the question which must next be examined is whether within this diversity there can be discerned any underlying or organising patterns.

At this next stage of data analysis it is necessary to include those many aspects of outcome besides drinking behaviour which were recorded for the 68 interviewed subjects – measures for instance of physical health, mental health and social adjustment, and SADQ measures of alcohol dependence (Taylor *et al*, 1986*a*). A principal components analysis was applied to this total pool of outcome data. For those who are not already familiar with this approach it may be useful to picture it as a way of determining whether, within a total rope (the totality of outcome measures), distinct strands (components or dimensions) can be teased out. Is the outcome rope amorphous, or does it have structure? The finding is that the first two major components account for 40% of the outcome variance, with the size of any subsequent individual components being only trivial. Table II presents these results in simplified form. The table shows the loading of each variable on the first two components, and in each instance these figures (with appropriate sign) may be taken as indicating the degree to which individual variables contribute to the definition of the given dimension. Loadings can run from +1 to −1, and a loading +0.3 or beyond is likely to be statistically significant. Only those variables which gave a significant loading on one or other component have been entered and the

TABLE II

*Principal components analysis of outcome variables: loadings on first two components after Obliman rotation (SADQ is score on Severity of Alcohol Dependence Questionnaire (Stockwell* et al, *1979); 'purpose in life' scoring from Crumbaugh (1968); EPI scoring from Eysenck & Eysenck (1964); other measures described in Taylor* et al, *1986a)*

| | *Component 1* | *Component 2* |
|---|---|---|
| Drinking over 12 months | −0.53 | −0.75 |
| Drinking over ten years | −0.51 | −0.69 |
| SADQ | −0.38 | +0.72 |
| Treatment experience, ten years | −0.40 | +0.50 |
| Troubles with drinking, 12 months | −0.75 | |
| 'Purpose in life' | +0.82 | |
| Mental health adjustment, 12 months | +0.78 | |
| Social adjustment, 12 months | +0.73 | |
| EPI-N | −0.65 | |
| Arrests for drunkenness, ten years | −0.37 | |
| Mental health adjustment, ten years | +0.49 | |
| Alcoholics Anonymous attendance, 12 months | +0.66 | |
| Alcoholics Anonymous attendance, ten years | +0.45 | |

legend to the table gives definitions. In summary, what the data show is as follows.

*Component 1* represents what in shorthand can be called a dimension of 'good drinking outcome, low dependence' at its positive end, versus bad drinking outcome, high dependence. Good drinking outcome is indicated by negative loading on measures of drinking and troubles with drinking, coupled with positive loadings on a range of variables such as 'purpose in life', mental health, and social adjustment. Thus along this dimension, 'good' is good in very broad terms embracing not only the drinking but other aspects of outcome as well. That this is indeed a dimension of 'low dependence' good outcome is shown by the significantly negative loading with SADQ. It is also important to note the negative loading with treatment experience: this dimension indicates a facet of good outcome which is associated with low treatment involvement and low involvement in Alcoholics Anonymous.

*Component 2* also clearly represents good drinking outcome at its positive end and it has negative loadings on the drinking variables. However, in contrast to the first component it has a strongly and significantly positive loading on SADQ. Component 2 can therefore be characterised as 'good drinking outcome, high dependence'. The contrasts go further: component 2 loads with indicators of high treatment and involvement, but good drinking outcome is not associated with any of the broader non-drinking indicators of good outcome such as good mental health or positive social adjustment.

Degree of dependence is thus again here entering the picture as a concept which can help to discern pattern and meaning within the complexities of what is happening. A cluster analysis (Taylor *et al*, 1986*b*) gave further evidence for the significance of dependence as a variable associated with different types of outcome.

### Predictors of outcome

It is now necessary to take the analysis one final stage further (Edwards *et al*, 1988) and look for predictors associated with good or bad outcome over the ten-year period – an attempt, as it were, statistically to underpin the psychiatric punter's bet. At first glance the formal answer to this question appears to be a statistical lemon. None of the 25 baseline variables, relating to such issues as childhood background, social stability, marital adjustment, personality, or intensity of drinking, have much ability to predict either the drinking or other aspects of overall group outcome.

TABLE III

*Relationship between intake variables and outcome component scores (n = 51–55): levels of significance determined by appropriate testing as given in Edwards* et al *(1988)*

| *Intake variables* | *Outcome component 1* | *Outcome component 2* |
|---|---|---|
| Occupation status | + + | |
| 'Trouble with drinking' score | − − − | |
| EPI-N | − − − | + + |
| EPI-E | | + |
| Parental cruelty in childhood | − | |
| Poverty in childhood | | + |
| Parents drank excessively | | + + |
| Wife at intake reported many hardships | − − | |
| Some unemployment in year previous to intake | + + | |
| Suicide attempt at any time prior to intake | | + |

+ (or −) $P<0.05$; + + $P<0.01$; + + + $P<0.001$.

If, however, instead of looking for pointers relating to aspects of total group outcome, one builds on the finding that there are two different dimensions and examines predictors not of overall outcome but separately for outcome along either of these dimensions, then some very significant facts emerge. Table III presents the main findings in simplified form, giving levels of signficance for appropriate tests.

Scores on component 1, previously shorthanded as 'good drinking outcome, low dependence' are predicted by several variables in a way which is largely in accord with intuitive common-sense. Good outcome is, for instance, here predicted by higher baseline occupational status, lower initial drinking trouble score, lower neuroticism, lesser parental cruelty in childhood, and a couple of other variables.

Component 2, the dimension characterised as 'good drinking outcome, high dependence', at its positive pole shows on the other hand a pattern of predictors which go refreshingly against what would be most peoples' intuition. Here good outcome is associated with such pointers as higher neuroticism score, greater likelihood of suicide attempt before the study's baseline, and higher extraversion score. Furthermore, two features which relate to childhood (parental drinking and poverty in childhood) are favourable predictors.

The most striking finding, however, is that there is no instance of a predictor for component 1 being significant for component 2, except for the neuroticism score, where the associations are opposite in direction. To look for 'predictors of outcome' in the conventional sense is unproductive because the wrong question is being asked. The questioner who looks in the wrong direction will erroneously be led to conclude that there are no strong predictive relationships, because the averaging process has cancelled out the fact that different aspects of outcome are differentially predictable.

Furthermore, when patients themselves retrospectively rated factors to which they attributed change in their drinking behaviour, significantly different patterns of influence were identified for change along the two different outcome components (Edwards *et al*, 1987). Improvement along the low-dependence outcome dimension (component 1) was attributed to a 'responsive' style of dealing with drinking problems, while improvement along component 2 was attributed to an 'active' style.

### The statistician and the patient

And there at the ten-year milepost let's rest the statistics and ask what this investigative effort has achieved and whether this longitudinal research method has in any way lived up to the claim that it can, through its attempts to record the moving picture, contribute something special to our understanding. It should of course be emphasised that we are dealing only with results from one particular case series, and whether the findings would generalise more widely can only be determined by further studies.

With that due qualification borne in mind it does, however, seem permissible to conclude that such research offers insights which could not possibly come from the narrow short-term view. Most simply it holds up a mirror to reality and forces us with due fright to admit the appalling seriousness of the condition with which we are dealing, and with due hope to hold before our patients the reality that long-term recovery is indeed possible. At the practical level, this research has implications for the matching of patients to treatment. Furthermore, at the theoretical and explanatory level there is a confluence of findings to suggest that the degree of the patients' dependence on alcohol may be rather central to understanding what happens in the moving picture show. Dependence is for the investigator an abstract concept, just another bit of data, but the research points to the personal significance of the dependent state to the person who has contracted this condition. At best it might be argued that the data not only hold up the mirror to the facts but also begin to reveal something of the why and how of the story line.

And at this point a critic might sharply object that this interpretation is not a matter of 'at best' but of 'at most arrogant'. Has not the scientific process and all its dissecting and analysing in the event become hoplessly distanced from any true understanding of the longitudinal human processes to which this type of research is supposedly dedicated? Doesn't life for ever evade science?

Let's, therefore, go back and ask what happened to the man from Deptford High Street. From the day of that encounter in the Emergency Clinic he has been entirely, resoundingly and continuously sober. He likes to take his holidays on the Continent and it is his peculiar habit to sit down in bars in Paris and night clubs on the Costa Brava and insist on ordering a pot of tea. It is tea for two because he and his wife are happily together again. His garden is neat and his house is well painted but those items do not, of course, rate in any principal components analysis. He is altruistic and has over recent years done much to help other troubled people. He was admitted to hospital for eight weeks after that Emergency Clinic visit in 1968, and sees that admission as a turning-point, despite his previous treatment failure. He bucked the statistical tide in several ways and did not affiliate with AA. The motivation which came from his desire to get his wife back was very important. He, himself, puzzles as to why, after such years of turmoil, recovery when it came appeared so blissfully easy.

We must all be puzzled by that individual story. How and why did that man get out of the gutter and move toward his corner of the triangle? It is frustrating that science gives no immediate understanding at that level of personal experience.

It may be complained that this lecture is badly constructed; that it's an impossible demand to be expected to respond to poetry, to look at a drunk in the street and then in the same space be expected to grapple with multivariate statistics. The lecturer will, with respect, answer "I've done it on purpose, so as to make the tension between these different views on life visible and imminent." The intention has been to use this data set to demonstrate the very general tension between science and the human issues at which psychiatric research is directed. Research will show us fear in a handful of data.

The challenge to research which dares the attempt to investigate stories such as that man's is to make science of human experience without in the process either losing the humanity nor in despair once more surrendering the science. That is most usually a very difficult demand and we have, therefore, to turn again and repeatedly to poetry and the novel for what science inevitably denies itself. In saying that, science is not being sold short.

Earlier a quotation was given from H. A. L. Fisher. To sum up the debate and bring together the threads of the argument, here is a statement by a rather different authority, the history master in Graham Swift's superb and astonishing novel *Waterland*. The teacher is explaining his profession to his class:

> What is a history teacher? he asks. He's someone who teaches mistakes. While others say, here's how to do it, he says, and here's what goes wrong. While others tell you, this is the way, this is the path, he says, and here are a few bungles, blunders and fiascos. (Swift, 1983)

Whether we come to these matter as scientist or as poet or novelist, as doctor or as patient, as man or woman walking down the High Street, we can probably all agree that there are lessons at many levels to be learnt from history. That is what this lecture has modestly sought to affirm.

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# Women who Kill their Parents

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The literature on parricide is reviewed with special reference to women. Seventeen female parricides (14 matricides, 3 patricides) were identified: in a remand prison (11), a Special Hospital (5), and a Regional Secure Unit (1). Six were schizophrenic, five had psychotic depression, three had personality disorders, and one was alcoholic. Two of the patricides had no psychiatric disorder but retaliated against violent fathers. Regardless of psychiatric diagnosis, matricides were mostly single, socially isolated women in mid-life, living alone with a domineering mother in a mutually dependent but hostile relationship. Similar characteristics are found in male matricides, who are predominantly schizophrenic. It is suggested that these features are of greater significance in matricide than the specific form of psychiatric disorder. Compared with filicides, matricides were significantly older, were single, and more often suffered from mental illness and substance abuse. Attention is drawn to the possible homicidal risk associated with delusions of poisoning and hypochondriacal delusions.

Homicide within the family accounts for 45% of murders in England and Wales (Home Office, 1986). Parricide (the killing of a parent) is the rarest form of intra-family homicide. In the years 1975–1985 the annual number of parricides ranged from 12 to 26 (average 19.3) and they account for 3–5% of homicides each year.

## Male parricides

Criminal statistics give no indication of the offenders' or the victims' sex, but *matricide by sons* appears to be the most common form of parricide in England and Wales (Green, 1981) and in Canada (McKnight *et al*, 1966). Apart from some single case reports, there are four series of matricide by sons reported in the psychiatric literature (O'Connell, 1963; McKnight *et al*, 1966; Green, 1981, Campion *et al*, 1985). All these are of hospital patients. Of a total of 98 cases in these series, 72 patients (73%) suffered from schizophrenia and 11 had a depressive illness.

In some other countries *patricide by sons* is the commonest form of parricide. In a non-hospital-based sample of homicides in the West of Scotland, Gillies (1976) found eight patricides and six matricides among 367 men charged with murder. All the matricides were mentally abnormal (four were schizophrenic), but five of the patricides were not mentally disordered and alcohol intoxication was a factor in four of these cases. In France, Devaux *et al* (1974) estimated that parricide formed 2.8% of all homicides, and that 65% of cases were patricides by sons. This is also the commonest form in Poland (Rozycka & Thille, 1972). In both countries, there was a marked association with schizophrenia. The only series study of patricide by sons is by Cravens *et al* (1985), of ten patients from Bellevue Hospital, New York; here too schizophrenia was the predominant diagnosis.

These studies suggest that in hospital surveys of adult males who kill either of their parents, the commonest diagnosis is schizophrenia. This is in contrast to studies of children and adolescents who kill their parents (Hellsten & Katila, 1965; Scherl & Mack, 1966; Sadoff, 1971; Tanay, 1973; Tuovinen, 1973; Corder *et al*, 1976; Post, 1982). They are usually boys in their teens who do not suffer from psychotic illness; they kill their fathers with explosive violence in response to prolonged provocation and parental brutality and abuse. The killing is followed by a sense of relief rather than guilt or remorse. The remaining family are often supportive, and follow-up suggests that these adolescents make a good long-term adjustment.

## Female parricides

Review of the psychiatric literature suggests that female parricide is exceptionally rare. Chiswick (1981) noted that matricide "is almost exclusively a crime of sons". Similarly, McKnight *et al* (1966) stated that parricides are "virtually always carried out by the sons". (They mistakenly cited a paper by Schacht (1949) as reporting a case of matricide by a daughter.) In Britain, the rarity of female parricide is emphasised by the virtual absence of cases in major homicide studies. In their survey of all persons indicted for murder in England and Wales in 1957–1962, Morris & Blom-Cooper (1964) found that of 95 women one had been charged with the murder of her father and one with that of her mother (compared with 25 matricides and 30 patricides among the 669 male accused). In the English Special Hospitals, Parker (1974) found only one case of parricide among 320 women admitted during the years 1961–1965. Green (1981), from Broadmoor Hospital, reported a son-to-daughter ratio in matricide of 4.8 to 1, suggesting that only 12 female patients would have been admitted in the 46 years from 1934 to 1979. Gillies (1976), in his study of homicide in the West of Scotland, found no cases of parricide among 33 females accused of murder in the years 1953–1974. The question arises whether some female parricides may commit suicide prior to arrest, and therefore do not come to trial. However, West (1965) found that of 60 women who committed murder followed by suicide, 55 killed their children, three killed their spouse and only two killed "other relatives". One of these was an elderly spinster living with her mother in extreme social isolation who developed unfounded ideas of going blind and becoming a helpless cripple, and gassed herself and her mother. The case is of special interest in the light of our own findings.

In other countries too, female parricide appears to be very rare. There are single case reports from the United States (Tanay, 1973) and Finland (Vaisanen & Vaisanen, 1983) of adolescent girls who kill a tyrannical parent. Cole *et al* (1968) examined 111 female homicides at the California Institution for Women and found only one father among their victims; the sample comprised one ninth of all women incarcerated for homicide in the United States in 1965. In West Germany, Häfner & Böker (1982) in their study of mentally abnormal violent offenders in the decade 1955–1964 included siblings and adoptive and foster parents with parents in a single group of victims. The victims of 14 of 123 females (11.4%) fell into this group, compared with 80 cases (19.3%) among the 410 men. The study also included crimes of violence other than homicide; thus the incidence of female parricide in this important survey cannot be determined but it appears to be very rare. In France, Devaux *et al* (1974) through enquiries from courts and psychiatric hospitals found 61 cases of parricide in the decade 1958–1967. Of these only 6% were patricides by women, and matricides by women were even rarer, though no figures are given. In Poland during the years 1959–1969 Rozycka & Thille (1972) found that 9 of 38 cases of parricide were committed by women, but they do not describe details of these separately from males. The only study specifically concerned with female parricide is a brief report from Japan by Hirose (1970), who examined 11 cases in Tochigi Prison in 1969; he also mentions a previous investigation of 10 cases seen in 1946–1948. However, he used a broad concept of parricide as he included parents-in-law. Of the combined total of 21 cases, only 6 killed their fathers and there were no matricides. Hirose commented that "Japanese female parricides often kill their mothers-in-law, the relationship between them often being conflicting". Of the 11 cases seen in 1969 none were psychotic, but 8 suffered from mental handicap or psychopathy, and most were depressed at the time of the killing.

## The present study

In view of its rarity and the virtual absence of published information, we present here a study of 17 cases of female parricide. We used a narrow definition of female parricide: the killing by a daughter of her biological mother or father, where the daughter was initially charged with murder and convicted of murder or manslaughter, or found unfit to plead or not guilty by reason of insanity. Of the 17 women in our study, 11 were identified in a female remand prison, 5 in a Special Hospital and one in a Regional Secure Unit.

*The prison sample.* The female remand prison serves the catchment area of Greater London and 17 counties of South Eastern England and East Anglia, including Leicestershire and Northamptonshire. The catchment area population was just over 20 million in 1981 (Office of Population Census and Surveys, 1981). During the decade 1977–1986, 239 women were admitted on initial charges of murder, of whom 13 (5.4%) were initially charged with the murder of a parent. However, we omitted two cases. One woman was charged with murdering her mother but had not yet come to trial. In the second case the charge of murder was reduced to manslaughter and then withdrawn. Thus, of the 239 women initially charged with murder in 1977–1986, only 11 subjects (4.6%) fulfilled our criteria. Their cases were fully documented in the prison hospital case papers, which usually contained several psychiatric reports, the statements of witnesses, records of the police interviews, the results of medical investigations and psychological assessment, probation officers' and social workers' reports, criminal records and records of previous psychiatric treatment. Descriptions of the relationship between the offender and the victim were usually available from independent informants as well as from the accused.

*The Special Hospital sample* was obtained by searching the register of female patients who were in Broadmoor Hospital at some time during the decade 1977–1986. Eight patients were identified who fulfilled our criteria, but three of these were already in the prison sample as they had initially been in the remand prison during the decade 1977–1986, before their admission to Broadmoor. The five new cases consisted of two patients who had been in the remand prison prior to that decade (in 1973 and 1975 respectively) and three patients who had been admitted to Broadmoor via other remand prisons in the Midlands and the West of England. Their index offences were committed during the years 1972–1979, and the hospital records contained a police summary of the offence and in some cases also the witness statements, as well as the psychiatric court reports.

*The Secure Unit sample.* One additional case came to our notice from a Secure Unit in the North East Thames Region. The patient had been remanded direct to hospital and had not passed through a remand prison. No other cases of female parricide had been admitted to the two recently established Secure Units within the region.

*General.* Overall, of the 17 patients in the study all but one had initially been admitted to a remand prison. Nine were examined personally (eight from the prison sample and one from the Broadmoor sample) and a psychiatric court report was prepared by one or other of the authors in eight of these cases.

## Method

The data were extracted from the case records. Follow-up information was obtained from the patient's current or last consultant in eight cases, from current hospital or prison records in seven cases and from personal contact in two cases. Diagnostic classification was based on ICD-9 (World Health Organization, 1978). We compared some of our data on parricides with data on filicides. The comparison group were 89 women charged with the killing or attempted murder of their children, who had been examined in 1970–1975 in the same female remand prison from which the prison sample of parricides was drawn (d'Orbán, 1979).

## Results

There were 14 cases of matricide and three cases of patricide.

### *Demographic data*

Four women were born overseas (two in the West Indies, one in North America and one in Europe) but all had come to England in childhood. The 14 matricides were predominantly women in mid-life (mean age 39.5 years, s.d. 9.7, range 17–54) who killed their elderly mothers (mean age 71.3 years, s.d. 7.2, range 60–83). The three patricides were young (aged 18, 20 and 26) and their victims' mean age was 53. However, both groups were born to relatively elderly mothers, whose mean age at the time of the offender's birth was 31.8 years, s.d. 4.3, range 25–44 (31.9 years, s.d. 4.5 for the matricides and 31.6 years for the patricides).

Seven of the matricides (50%) were only children, whereas the three patricides came from large sibships (6,7 and 8 respectively).

### *Social situation*

The social situation of these women was characterised by marked isolation. Twelve subjects (70%) were single, three were separated or divorced and two were married. Five subjects had children, but in four cases the children were not living with the subject: they were in care, adopted away, at boarding school or were living independently. In only two cases (both patricides) was there an intact family with both parents living together with the offender. In ten cases one of the parents had died (nine fathers and one mother) while in the remaining five cases the parents had separated during the subject's childhood. Thirteen subjects (76%) were living alone with the victim (12 with a mother, one with a father).

### *Relationship with the victim*

Among matricides the relationship with the parent-victim, with one exception, had been chronically disturbed for many years, independently of psychiatric diagnosis. The exception was a patient suffering from depressive illness, living in extreme isolation with her mother who some three years before the offence had become demented, incontinent and aggressive. However, until the onset of the mother's dementia they had been devoted to each other. The daughter could not bear the thought of her mother having to be admitted to a psychiatric hospital; she suffocated her and then attempted suicide. In the 13 other cases of matricide the mother–daughter relationship was one of mutual dependence but with marked underlying feelings of hostility and resentment. The mothers were described by the offenders, and usually also by other witnesses, as domineering, overwhelming, demanding, over-critical and authoritarian. In eight cases the mother's physical or psychiatric illness (or a combination of these) contributed to the disturbance in the relationship. Six of the mother-victims suffered from chronic physical illness and were frail and disabled, two had senile dementia, one was schizophrenic and one was a chronic alcoholic.

In the patricide cases too there was chronic conflict with the father. Two of the father-victims were described as tyrannical, violent and abusive towards their daughters and also to other members of the family; in the third case the daughter had very ambivalent feelings towards her father and alleged that he had forced her to have an incestuous relationship for many years.

### *Psychiatric history and diagnosis*

Twelve patients (70%) had a previous history of psychiatric in-patient or out-patient treatment and three subjects were under treatment at the time of the offence. Eleven patients (65%) had a history of previous suicidal attempts. Five subjects had a history of alcohol abuse and two of multiple drug abuse. Eleven subjects (65%) had no previous convictions. Of the four with convictions, only one had a history of violence (assaults and malicious wounding), while the others were convicted of shoplifting, theft, possession of drugs and drunkeness offences. Two subjects had had several short-term prison sentences.

Psychological tests were available in 13 subjects. Their mean WAIS IQ was 96 (s.d. 20.6, range 64–133); the four subjects not tested were judged to be of normal or average intelligence. One subject had mild mental handicap (IQ 64) and three were of borderline intelligence.

A primary diagnosis of psychotic illness was made in 11 patients (65%), all of whom were matricides. There were six cases with schizophrenia (two paranoid, two schizoaffective, one hebephrenic, one residual) and five cases of psychotic depression (three manic–depressive and two psychogenic depressive psychoses). Of the remaining three matricides, two had personality disorders (one asthenic, one unspecified) and one had alcohol dependence. A secondary diagnosis was made in five matricides (mild mental retardation in two, neurotic depression in two, explosive personality disorder in one). Depression was a prominent clinical feature in eight matricide cases (five depressive psychoses, one schizoaffective psychosis and two secondary diagnoses of neurotic depression).

Among the three patricides, two women did not suffer from psychiatric disorder, while the third had an antisocial personality disorder.

### *Psychopathological aspects*

Parricide was directly related to psychotic symptoms in ten subjects. Five of the six schizophrenics had persecutory delusional ideas. In three cases these included beliefs that their mother was trying to harm them, poison them or poison their children. Altruistic motivation was present in two cases and both committed multiple killings. A patient with schizoaffective psychosis believed that she herself, her mother and her two children had cancer and she killed her mother and her children to prevent their suffering. The second patient, who suffered from psychotic depression, killed her mother to save her from suffering for which she blamed herself; six years later she killed her husband in identical circumstances, blaming herself for her husband's illness. Killing as extended suicide, with primary suicidal intent but a desire "not to leave the mother behind", occurred in one schizophrenic patient who feared that her neighbours were going to kill her and her mother, and in three patients with psychotic depression whose mothers were grossly physically disabled or demented.

In seven subjects the parricide was not directly related to mental illness. A marked element of victim precipitation occurred in three cases, where the parent was seen as a cruel, violent and tyrannical figure. Two of these cases were patricides by girls aged 18 and 20 who were not suffering from psychiatric disorder. They had been subjected to severe assaults since childhood and had never previously retaliated but eventually stabbed their fathers in circumstances where they themselves were in fear of being attacked. The third case was a 54-year-old woman with alcoholism and neurotic depression who lost control when her mother attempted to strike her over her operation scar, which she had done on many previous occasions. In all three cases (two of which were dealt with by a Probation Order) the remaining family were subsequently forgiving and supportive in their attitude. Two subjects (one with chronic residual schizophrenia and one with a personality disorder and borderline mental handicap) killed in the course of a quarrel in which there was less obvious victim precipitation; both lived in a cold, hostile and affectionless relationship with their mothers. In one case the offence could be interpreted in terms of an acute catathymic crisis as described by Wertham (1978) and Revitch & Schlesinger (1978), with escalating tension finally erupting into severe violence against a nagging, over-critical mother, by a young girl with feelings of inadequacy, isolation and depression following adverse life events.

A sexual element was involved in three cases, two of them patricides. A woman aged 26 with antisocial personality disorder claimed that her father had had an incestuous relationship with her since the age of 18. She stabbed her father in response to an alleged sexual approach when he was drunk. She appeared to have been in a transient psychotic state at the time, giving a bizarre account of her mother (who had died two years before) having been present and fighting with the father in an attempt to protect her. After killing her father she covered him up and placed her mother's picture on the body. A second girl aged 18 who killed her father was described as having been an unwilling pawn in her parents' marital conflict, shielding her mother from the father's aggression. There was no history of overt sexual abuse, but her father showed an excessive interest in his daughter's sexuality. He appeared jealous and angry about her relationships with boys, humiliating and taunting her and "lecturing" her on sex. He made abusive sexual threats against the girl and her mother and showed her obscene photographs he had taken of her mother. The third case was a schizophrenic matricide who expressed delusional ideas about her mother having stolen her penis in childhood in order to satisfy herself sexually, thereby turning the patient into a woman although she wanted to be a man. She also accused her mother of marrying and having sexual intercourse with her boyfriend.

### *The offence*

In the majority of cases the immediate precipitant to the offence was a quarrel or argument with the parent.Two subjects and four victims were intoxicated with alcohol at the time of the offence. Deliberate and advanced planning was a feature seen only among psychotic subjects (four depressive psychoses and two paranoid schizophrenics). The main method of killing was by a blunt instrument in five cases, stabbing in four, strangulation in four, suffocation in two, corrosive fluid in one and fire in one. Additional methods were used in six cases (strangulation, suffocation and poisoning). Extreme violence was used in eight cases of matricide (e.g. numerous blows to the head with a hammer, axe or blunt instrument). Four subjects attacked their mother in her sleep.

After the killing, only two subjects (neither of them psychotic) made an initial attempt to conceal their act by blaming others. Five subjects made a determined suicidal attempt immediately after the killing and a further two had a definite intention to do so and had left suicide notes; all these subjects were suffering from psychotic illness.

### *Verdict and sentence*

The initial charge in all cases was murder but only one subject was eventually convicted of murder and sentenced to life imprisonment (although there was undisputed medical evidence of diminished responsibility); on appeal, further medical evidence was given to support the original plea of diminished responsibility, including an opinion that she suffered from premenstrual syndrome; the appeal succeeded and she was put on probation with a condition of treatment. Three subjects were found unfit to plead and detained in hospital under the Criminal Procedure (Insanity) Act 1964. Eleven subjects were convicted of manslaughter on the grounds of diminished responsibility: of these, seven were made subject to a Hospital Order (five with restriction) and three were put on probation (two with a condition of treatment). The remaining case was the only one where there was conflict of medical opinion on responsibility (she had a personality disorder with mild mental handicap). Remanded to hospital for assessment, she was thought unsuitable for treatment and received a three-year prison sentence, which she herself preferred. Two subjects (both patricides) were convicted of ordinary manslaughter; one was put on probation and the other received a four-year prison sentence, reduced on appeal.

Of the 12 subjects (70%) sent to hospital, seven were admitted to Broadmoor Hospital, two to a Regional Secure Unit and three to ordinary psychiatric hospitals.

### *Follow-up*

The earliest offence in this series occurred in 1972 and the latest in 1986; thus the length of follow-up (to June 1987) ranged from one to 15 years. One patient admitted to a Special Hospital as unfit to plead was eventually transferred to her local psychiatric hospital and died there of natural causes eight years after the offence. Three patients (two with psychotic depression and one with paranoid schizophrenia) committed suicide respectively one month, three years and ten years after their trial. All three patients had attempted or intended suicide at the time of their offence. Only one patient committed a further offence. At the time of the first offence, she suffered from recurrent episodes of psychotic depression with delusional ideas of guilt and self-blame for her mother's illness. She killed her mother and attempted suicide. She was found to have diminished responsibility and was admitted on a Hospital Order to her local psychiatric hospital where she made a good recovery. However, six years later when her husband fell ill she developed a recurrence of her delusional ideas, blamed herself for her husband's illness and killed him. She was again found to have diminished responsibility and was admitted to a Special Hospital.

TABLE I
*Comparison of parricides with filicides*[1]

| | *Parricides (n = 17)* | *Filicides (n = 89)* | *Significance* |
|---|---|---|---|
| Mean age: years | 36.3<br>(s.d. 11.3) | 24.6<br>(s.d. 5.6) | $P<0.001$ |
| Single status | 12 (71%) | (19 (21%) | $P<0.001$ |
| Foreign-born | 4 (24%) | 19 (21%) | NS |
| Previous criminal record | 6 (35%) | 18 (20%) | NS |
| Previous psychiatric treatment | 12 (71%) | 35 (39%) | $P<0.05$ |
| Alcohol or drug abuse | 7 (41%) | 8 (9%) | $P<0.001$ |
| Psychotic illness | 11 (65%) | 14 (16%) | $P<0.001$ |
| Suicide attempt immediately after the offence | 5 (29%) | 18 (20%) | NS |

[1] Source: d'Orbán, 1979.

### *Comparison with filicides*

Table I presents some comparative data with 89 maternal filicides (d'Orbán, 1979) who were admitted in 1970–1975 to the same remand prison from which the present prison sample of parricides was drawn. The parricides were significantly older, single women who showed no difference in previous criminality but had more often been under previous psychiatric treatment. Substance abuse and psychotic illness were both significantly more common among parricides. There was also a marked difference in the type of psychotic illness: whereas among parricides schizophrenia (six cases) and psychotic depression (five cases) were almost equally common, the 14 filicides who were psychotic suffered predominantly from schizophrenia or schizoaffective psychoses, and only one filicide had a depressive psychosis. There was no difference in the proportion who attempted suicide immediately after the offence.

## Discussion

How far are the subjects in this study representative of female parricide? Five of our subjects were not admitted to hospital and a sample drawn exclusively from psychiatric hospitals would have missed them. (This casts doubt on the assertion by Green (1981) that "the Broadmoor matricide population is representative of most matricides committed in England and Wales".) Conversely, all the patients in our Broadmoor sample had initially been seen in a remand prison setting, and only one patient was admitted directly to a Regional Secure Unit without passing through prison. The subjects who would most likely have been missed in this study are those who commit suicide prior to arrest. Gibson (1975) presented statistics on homicide from which it can be calculated that 8.6% of female homicide suspects commit suicide. However, West (1965) found that only one of his 60 female murder-suicides committed matricide. We therefore believe that our findings are likely to be reasonably representative of female parricides in South Eastern England.

Bluglass (1979) stated that "murders of mothers by daughters are invariably psychotic". In this series, although matricide was associated with psychotic illness in 11 of 14 cases (78%), three of our matricides were not psychotic. Further, of the three patricides none were psychotic; indeed, two of them were not suffering from psychiatric disorder but killed tyrannical fathers in response to prolonged parental violence. They were comparable to the young male "reactive parricides" described by Tanay (1973) and the adolescent parricides of Scherl & Mack (1966), Post (1982), and Corder *et al* (1976). However, the syndrome of reactive parricide is not confined to adolescents; one of our matricide cases (a 54-year-old alcoholic with neurotic depression) showed very similar characteristics.

Some features of matricide by daughters show a close similarity to matricide by sons. Characteristically, female matricides were women in mid-life living alone with an elderly, domineering mother in marked social isolation. The mother–daughter relationship was characterised by mutual hostility and dependence, and the killing was often carried out with extreme violence. These features of female matricide were present regardless of the specific psychiatric diagnosis. Male matricides have also been found to be mostly single, socially isolated men living alone with a domineering mother, whom they killed with often extreme violence. A sexual element in matricide may be commoner in men (38% in Green's study) but it does also occur in women, as illustrated by one of our schizophrenic subjects. Chiswick (1981) suggests that the apparent relationship of schizophrenia to matricide by sons "might owe more to opportunity than psychodynamics" as the socially disabling effect of schizophrenia reduces the likelihood of marriage and prolongs dependency on parents. The similarity in the social situation of our female matricides with that of male matricides tends to confirm that it is the prolonged hostile–dependent, isolated relationship with a dominant mother that is the significant aetiological factor in these offences rather than any specific form of psychiatric disorder. This would be in keeping with the observation of Virkkunen (1974) that the majority of violent acts by schizophrenics are committed not as a result of psychotic symptoms but because of a hostile, dependent–aggressive relationship with the victim.

From the point of view of homicidal risk, two features of phenomenology merit comment: the possible dangerousness of delusions of poisoning and of hypochondriacal delusions. The apparent correlation between these symptoms and the intra-family homicide may be an artefact of the sample, and we do not know the incidence of these symptoms in the general population, nor the proportion of cases in which cases with these symptoms manifest dangerous behaviour. However, in our study two of the schizophrenic patients had delusions of being poisoned by their mothers. Mawson (1985) has drawn attention to the association in a sample of Broadmoor patients of delusions of poisoning with homicide. Not surprisingly it is often family members who become involved in such delusions: in Mawson's series of 14 male patients a parent became the victim of violence in five cases.

Secondly, our findings draw attention to the possible altruistically motivated homicidal risk to family members in patients with hypochondriacal delusions. This was commented on by West (1965) in cases of murder–suicide, and the single case of female matricide in his study was an example. Three of our subjects suffered from hypochondriacal delusions and two of these committed multiple killings. The homicidal risk in these patients was masked by a very deliberate and careful concealment of their plans to kill, and a blandness of affect incongruent with their depressive delusions; indeed two patients were under psychiatric treatment at the time of their offences. Hypochondriacal delusions seemed especially dangerous when they extended to others. Two of our patients came to believe that they had been responsible for engendering illness not only in members of their family but in a wider circle. While in the remand prison, they expressed ideas of being responsible for the illness of the other patients in the prison hospital; one talked of wanting to find a hammer to kill the staff and other patients in order to relieve them of their suffering. We draw attention to the danger of this unusal syndrome of altruistically motivated killings as we have seen a similar clinical picture in some women who kill their children. The usual diagnosis is one of schizoaffective psychosis or psychotic depression, but the essential features are hypochondriacal delusions, delusions of contaminating others, a bland affect, careful concealment in case discovery should prevent them from carrying out their plans, and a determined suicidal attempt after the killing.

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# Unsubstantiated Complaints of being Poisoned
## Psychopathology of Patients Referred to the National Poisons Unit

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The psychopathology of a series of patients referred to a combined psychiatric–toxicological assessment service with the specific complaint of being, or having been, poisoned is described, and related to the nature of their exposure to incriminated agents. The need for and value of this service are discussed.

Poisoning is common; self-poisoning is a well-recognised area of concern for both toxicologists and psychiatrists, and complaints of poisoning are not uncommonly made to both. There have been reports on patients presenting with this complaint in occupational settings (Brodsky, 1983*a*; Markowitz *et al*, 1986), on investigations of mass psychogenic illness (Colligan, 1981; Boxer, 1985), and in relation to industrial compensation claims (Brodsky, 1983*a*). Behavioural toxicology and teratology became distinct areas of clinical psychological practice in the early 1970s (Fein *et al*, 1983; Weiss, 1983), but psychiatric–toxicological liaison work has been little reported.

Public awareness of environmental hazards has increased greatly in recent years, and concern extends from radioactivity to drugs and chemicals (Weiss, 1983). Threats of possible poisoning require cognitive appraisal, and commitments, beliefs and a wide range of personality characteristics influence coping with such threats (Janis, 1974; Ray *et al*, 1982; Lazarus & Folkman, 1984). Fears are that exposure to toxic substances may be unrecognised (clinical signs appearing later), and that toxic substances may be difficult to trace and insidiously concentrated in tissues, leading to chronically harmful changes. Many toxic substances are known to act primarily on the nervous system, causing physical and mental symptoms (O'Donaghue *et al*, 1977). Occult poisoning has been publicised as a sinister means of murder (Sayers, 1930; Christie, 1961), and sensationalised by politically minded ecologists and the media. Public anxiety has risen with public awareness (Murray, 1978).

Comstock's observation (1978) that this "poison mystique" has increased the tendency for symptoms to be attributed by patients to toxic substances, illustrates how influential such factors may be on personal appraisal and coping processes. Attribution theorists (Heider, 1958; Kelley, 1967) maintain that following threatening events, people make attributions so as to understand, predict and control their environment. Attributions may concern causes or predict effects (Kelley & Michela, 1980). False attribution of morbidity to poisoning may itself contribute to morbidity (Murray, 1978).

Poisoning is a self-explanation as well as a presenting problem; and such a personal meaning may arise from perceived threats (see Furlong, 1982). Cultural beliefs are also significant (Eisenbruch, 1983). Poisoning has been described in psychopathological terms as a threat to ego vitality (Scharfetter, 1976). The belief a person has that he/she is being, or has been, poisoned may be a true perception, a suspicion, a misinterpretation, an overvalued idea or a delusion. The characteristics of an overvalued idea, first described by Wernicke (1900), were reviewed by McKenna (1984), who reported on the clinical conditions in which such ideas occur and their frequent association with an abnormal personality. The nature of delusions, defined by Jaspers (1959), has been reviewed by Arthur (1964) and Garety (1985).

Delusions of poisoning have been reported in association with infidelity, jealousy and violence (Shepherd, 1961; Mowat, 1966; Mawson 1985), the supposed poisoner frequently being a victim of the violence. Scharfetter (1976) proposed this type of persecutory delusion to be one by which patients express fear that they and their world will cease to exist. He noted that delusions of poisoning can arise in conditions of sensory deprivation and in experimental situations (e.g. in states of altered consciousness and under the influence of hallucinogens).

Varsamis *et al* (1972) found that schizophrenic patients with delusions of poisoning reported more somatic symptoms (including disturbances of taste and smell) than a control group without these delusions. The index group also had an increased preoccupation with sex, the poison usually being blamed for a change in sexual drive. Citing Connolly

TABLE I

| Case | Age | Sex | Marital status | Employment | Alleged source of poisonous agent | Alleged poisonous agent | Physical symptoms complained of at clinic | Evidence of physical illness at clinic | ICD–9 diagnosis |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 33 | F | Single | Unemployed unmarried mother | Boyfriend and his mother | Various | Malaise, weight loss, myalgia | None | Paranoid state 297.0 |
| 2 | 46 | F | Single | Unemployed ex-secretary | Unknown perpetrators | Several unspecified | Very many in many systems | None | Paranoid state 297.0 |
| 3 | 60 | F | Married | Unemployed ex-beautician | Husband | Several | None | None | Paranoia 297.1 |
| 4 | 36 | F | Divorced | Unemployed ex-receptionist | No person implicated | Cat flea spray | Weight loss, blurred vision, chest pain, myalgia, hair loss | None | Paranoid personality disorder 301.0 |
| 5 | 49 | F | Married | Analytical chemist | Workplace | Brucine | Malaise, dysuria, rectal burning, poor concentration | Iron deficiency anaemia treated before referral | Neurotic depression 300.4 |
| 6 | 54 | F | Married | Student | Own use of product | A weedkiller | Weight loss, prominent veins, nasal appearance, back pain | None | Neurotic depression 300.4 |
| 7 | 54 | M | Single | Scrap metal sorter | Workplace/ home | Lead | Cold extremeties, unpleasant sensations | None | Affective personality disorder 301.1 |
| 8 | 64 | F | Widowed | Care assistant | Neighbour | Horticultural products | None | None | Not mentally Ill |
| 9 | 25 | M | Single | Research chemist | Work | Cyanide gas | None | None | Anxiety state 300.0 |
| 10 | 39 | M | Married | Acoustics consultant | Work | Ammonium ferrocyanide | None | None | Anxiety state 300.0 |
| 11 | 37 | M | Single | Floor and carpet layer | Work | Several types of adhesive | Lethargy, persistence of visual images | None | Anxiety state 300.0 |
| 12 | 32 | F | Single | Photography student | Work | Photomounting aerosol | Headaches, lethargy | Tonsillitis | Not seen by a psychiatrist; viral upper respiratory tract infection |
| 13 | 50 | F | Married | Unemployed ex-nurse and doctor's receptionist | Husband | Several natures: unknown | None | None | Not seen by a psychiatrist; history and other evidence in keeping with a paranoid psychosis |

TABLE II

*Substances implicated in eight cases of suspected poisoning and an assessment of their effects*

| *Case* | *Substances implicated* | *Alleged type of exposure* | *Possible dose* | *Predicted effects*[1] | | *Comments* |
|---|---|---|---|---|---|---|
| | | | | *Acute* | *Chronic* | |
| 4 | Organophosphate insecticides (Dichlorvos, Iodofenphos) + solvent (trichloroethane) | Acute inhalation | Mild to moderate | Sweating, nausea, vomiting, abdominal pain, headache, weakness, small pupils, muscle-twitching | — | Acute symptoms could relate to exposure but not proven |
| 5 | Brucine (bitter – like strychnine) | Acute × 3 inhalation | Unlikely | Muscle spasms, convulsions etc. as for strychnine | — | No evidence for toxic effects; anaemia, menorrhagia, fibroids |
| 6 | Weedkiller 2-4-5-T 2-4-D (paraffin as solvent) | Acute inhalation | Unlikely; ? solvent inhalation | Sore throat, nasal congestion, nausea, vomiting, headache | — | Single exposure, correct dilution, no skin contact; ? acute effects of "toxin-free diet", weight loss |
| 7 | Lead | Chronic ? inhalation/ ingestion | Mild | — | Gastro-intestinal symptoms, muscle pains, weakness, paraesthesiae | Changed job, house cleaned, mildly raised lead levels treated; symptoms unaltered |
| 9 | Cyanide gas | Acute inhalation | Mild | Dizziness, headaches, tightness of chest, dyspnoea, etc. | — | Seen in hospital; no specific treatment needed |
| 10 | Potassium ammonium cyanide | Acute ingestion | Unlikely (low toxicity) | Only if heated to decompose with release of cyanide gas | — | Symptoms not related to toxic effects |
| 11 | Organic solvents | Acute or chronic inhalation | Mild to moderate | Respiratory irritation, bronchospasm, headaches, ataxia, confusion, weakness, lethargy | Demyelination, polyneuritis, visual impairment, hepatic/ renal/cardiac damage | Acute dizziness and respiratory irritation could be toxic effects; cannabis; asthma |
| 12 | Solvents | Acute inhalation | ? mild | Irritation of eyes and respiratory tract, dizziness, headache, nausea, confusion | Neuropathy, haemato-logical/renal/hepatic damage | Viral infection; ? minor exposure |

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1. In the event of actual exposure, not necessarily in the case in question.

& Gittleson's findings (1971) of an association between delusions of sexual change and olfactory and gustatory hallucinations in schizophrenia, Varsamis *et al* (1972) suggested that delusions of poisoning arise from sensory perceptual symptoms. Mowat (1966) concurred with this view. Johnson *et al* (1977) used a reattribution procedure to treat a patient with a delusional system arising from sensory perceptions.

Mawson (1985) has speculated that there might be an association between temporal lobe dysfunction and delusions of poisoning, since abnormal sensations of taste and smell may occur in temporal lobe seizures without associated motor phenomena.

There are no previous reports of a series of patients presenting to a toxicologist or physician with complaints of symptoms attributed by them to unsubstantiated poisoning.

## Method

Between March 1984 and March 1986, 13 patients were referred to the National Poisons Information Service at the Poisons Unit, New Cross Hospital, London, with the complaint that they were being, or had been, poisoned. Four men and seven women were interviewed by a consultant physician (GNV) and a psychiatric registrar (EAH) jointly. These patients were then physically examined by GNV. Arrangements for relevant investigations were made. Each patient was then interviewed by EAH alone and finally seen jointly by both interviewers. At the next appointment, the results and implications of the investigations undertaken were jointly discussed with the patient. Further investigation, physical treatment and/or psychological treatment was proposed as necessary. Two female patients were unwilling to see a psychiatrist and were seen by GNV alone.

## Results

Information on the 13 patients is summarised in Table I. The age range of these patients was 25–64 years (mean age 44.5 years, female mean 47.1, male mean 38.8 years). Six patients were single, two were divorced, one was widowed and four were married. Cases 3, 5 and 11 were immigrants to Britain. The 11 patients assessed jointly had a high psychiatric morbidity and all were anxious about their health. Besides each having seen their general practitioner, nine patients had seen at least one other doctor or medical team in addition to being referred to the Poisons Unit. The mean number of contacts with doctors or medical teams, including that at the Poisons Unit, was 3.5 per patient. This represents a considerable use of medical resources and reflects the determination of some of these patients to pursue medical help.

Nine patients were referred by their general practitioners, three by National Health Service consultants and one by his firm's medical officer. Two patients had a family history of mental illness. The sister of case 5 had been diagnosed as suffering from schizophrenia in Poland. Case 9 described his paternal grandmother as having become mentally ill in old age.

### Suspected poisons

Information presented in Table II concerns the possible acute and chronic effects of exposure to the substances thought by the 11 patients seen jointly by EAH and GNV to be responsible for their symptoms. Among the 13 patients seen by the toxicologist (GNV), four (cases 1–3 and 13) could not specify any particular toxic agent and showed no evidence of toxic effects on physical examination or laboratory screening; in each of these cases, exposure was alleged to have occurred at home.

Of the remaining nine cases, three (cases 4, 6 and 8) involved suspected agrochemicals, with exposure allegedly occurring at home. Six involved alleged exposure at work to solvents or chemicals popularly thought of as toxic, including lead, cyanide and a strychnine derivative (cases 5, 7 and 9–12).

Toxic effects were not considered to have occurred at any stage in cases 5 and 10, and were thought extremely unlikely in cases 8 and 12. Short-lived toxic effects may have been experienced by cases 4, 6, 9 and 11; with the possible exception of case 4, any toxic effects were not serious in these cases. These four patients complained of persistent symptoms far exceeding the expected duration of the acute toxic effects which would be anticipated from the exposures claimed.

Case 7 had been chronically exposed to lead at home and at work. He had been diagnosed as suffering from lead poisoning and treated for this in 1981. His mildly raised blood lead level in 1985 was not considered to account for his symptoms, nor did these improve when treatment with penicillamine in 1986 lowered his blood lead concentration. (Blood lead has been recognised to have a poor discriminatory value in the diagnosis of lead poisoning (Lee, 1981).)

The other positive toxicological findings were evidence of abuse of cannabis (case 11) and benzodiazepines (case 3). General medical assessment demonstrated partially treated anaemia secondary to menorrhagia in case 5, and weight loss due to an inappropriate diet in case 6.

### Psychopathological features of individual cases

Four patients were considered to be deluded. Cases 1–3 were interviewed by the psychiatrist (EAH) and diagnosed as suffering from paranoid psychotic conditions. Cases 2 and 3 had both had previous episodes of psychiatric illness. Case 13 was not psychiatrically interviewed at the clinic but had telephone conversations with EAH, and sent many letters to the Poisons Unit. She had had paranoid psychosis diagnosed in 1981. These four women were unemployed. They all believed that particular people were responsible for poisoning them. Case 2 was unable to identify her persecutors, but believed them to be pursuing her from place to place. The three other women specified their sexual partners, although they had not had sexual relations with them for some time. While cases 1 and 2 held the delusion that they were being poisoned, case 3 believed that her husband was persecuting her and would eventually kill her. She harboured only a suspicion that her husband might be poisoning her. Her relationship with her husband was an ambivalent one tinged with jealousy.

Case 2 differed from cases 1, 3 and 13 in her attitude towards seeking and accepting help. During her long psychiatric history (which she attempted to conceal), her social circumstances had declined considerably. Her life was dominated by her quest for health, which her delusion would never allow her to possess. She devoured medical attention only to confound any moves that might threaten her sick and persecuted status. Her symptoms fulfilled many of the criteria for St Louis hysteria as described by Perley & Guze (1962). It appeared that contact with medical staff met her interpersonal needs and that she had established this pattern of meeting these needs before developing her delusion.

Cases 4–12 attributed their symptoms to particular chemicals or products containing these. Cases 4–6, 8 and 11 held the overvalued idea that toxic effects of the products to which they had been exposed were continuing to harm them (i.e. that they were suffering from chronic poisoning).

Case 6 adopted a low-calorie, high-fibre 'detoxifying' diet. She attributed her subsequent weight loss to her earlier inhalation of weedkiller vapour. Case 5 had become anaemic (Hb 8.9 g/dl) secondary to menorrhagia. She had been treated by a dilatation and curretage, a blood transfusion and intramuscular and oral iron. She attributed her anaemia and persistent symptoms to her earlier use of brucine sulphate (a derivative of strychnine), as a bitter addition to an alcoholic beverage at work, rather than to a physical disorder for which a hysterectomy had been recommended. Case 11 incorrectly attributed persistent symptoms, which could have been due to his regular use of cannabis, to his use of adhesives. Case 8 experienced symptoms which she attributed to her neighbour's intensive use of horticultural products. Apart from this overvalued idea, no other psychopathology was evident.

Case 4 had pronounced paranoid personality traits and became querulous. She was diagnosed as suffering from a paranoid personality disorder. Cases 5, 6 and 11 had noticeable obsessional personality traits. Case 7 was diagnosed as suffering from an affective personality disorder. He had experienced unpleasant bodily sensations for many years, about which he ruminated. He was a solitary man who made poor eye contact, spoke in a monotone and read from notes rather than directly answering questions. He was introspective and pessimistic, but not overtly low in mood. His opinion that his blood lead level was responsible for his symptoms was not conveyed with the preoccupying conviction of an overvalued idea. His attribution of his symptoms to lead poisoning had in part been encouraged by the quantity of medical activity devoted to his investigations and care.

All the male patients were employed, and associated the symptoms to their exposure to particular substances at work. Case 9 suffered panic attacks following a laboratory accident. Case 10 was careless of laboratory hygiene and attributed later symptoms of gastroenteritis to the tiny amount of ammonium ferrocyanide he had tasted. Self-blame enhanced his anxiety.

Case 12 was not psychiatrically assessed. She attributed feeling febrile and breathless for two days to her use of a photomounting aerosol. She readily accepted that she had symptoms and signs in keeping with a viral infection when this was diagnosed. Neither her concern about her use of the aerosol nor her ideas regarding its effects became pathological.

## Discussion

The authors are unaware of any other combined psychiatric–toxicological service in Britain. Although over a two-year period only a few patients complaining of being or having been poisoned were referred to the Poisons Unit, no particular notification was given that this service might be available, and demand for the service increased steadily.

The psychiatric morbidity of this series of patients was high. All the patients attributed somatic symptoms to poisoning. Short-lived acute toxic effects were found to have occurred in four cases (cases 4, 6, 9, and 11). In none of the patients were persistent symptoms found to be due to chronic toxicity.

Excluding cases 12 and 13, who were not seen by the psychiatrist, three patients were deluded (cases 1–3); none of these held a specific chemical or product responsible for their symptoms, but they directly implicated people. All other patients held a specific agent responsible. Cases 1–3 all claimed to have experienced strange tastes, and case 2 to have smelt a strange smell. These symptoms resemble those noted by Varsamis *et al* (1972) among schizophrenic patients with delusions of poisoning. No more emphasis was placed on these symptoms than on others of which cases 1–3 complained. None of these patients had a history of epilepsy or gave a history typical of an aura. Electroencephalograms were not performed.

Overvalued ideas characterised five cases (4–6, 8 and 11), of whom cases 5 and 6 were clinically depressed. The conditions, reviewed by McKenna (1984), in which overvalued ideas occur have been considered to carry a poor prognosis. Overvalued ideas have been considered to be more common in people with abnormal personality traits. Among cases 4–6, 8 and 11, only case 8 was found to lack these. Significantly, perhaps, case 8's overvalued idea did not contain such intensity of personal threat as did the other cases. She also perceived herself as more able to rid herself of her problem through her own efforts than did cases 4–6 and 11.

Misinterpretations and misattributions of signs and symptoms of poisoning were common. Reattribution was facilitated most easily in those cases where anxiety was the predominant psychopathological feature (i.e. cases 9–12).

In his study of 70 people who believed themselves to have injuriously inhaled fumes at work, Brodsky (1983*a*) identified two groups: those who regarded themselves as well before the particular exposure, and those who experienced symptoms and later attributed these to inhalation of a chemical. None of either group showed any physical effects of toxicity on later examination. Among those referred to the Poisons Unit Clinic, cases 4 and 6 most closely resembled those in the first group identified by Brodsky, and case 5 those in the second. Unlike the patients in Brodsky's population, however, the motives of the patients seeking help from the National Poisons Unit were unrelated to possible financial gain. Only case 8 was attempting to muster support for a cause (i.e. ridding herself of the "public nuisance" she perceived her neighbour's horticultural activities to be).

Only during this decade have a number of patients been referred to the National Poisons Unit complaining of persistent symptoms which they have attributed to chronic poisoning. This is thought to reflect a change in the general public's attitude towards chemicals of all types and in their attribution tendencies. Mechanic (1961) postulated that the inclination to seek medical aid is related to factors concerning "illness recognition" and "illness danger".

Public awareness of the potential for toxicological problems, both real (as at Bhophal) and imagined (as with many of the claims made by pressure groups), has increased; and it is not surprising that the toxicity of substances can assume a psychological significance far greater than that of their known toxic actions. Agrochemicals are particularly suspected by the public of having occult toxic effects, and it is interesting that cases 4, 6 and 8 related to the domestic rather than professional use of these. The cases related to the use of chemicals at work show both that instructions may be ignored and that employers may have limited knowledge of toxic hazards. More public education is needed.

These patients had frequently been referred to specialists other than psychiatrists owing to their diverse somatic symptoms. By the nature of their psychopathology, patients in this series were inclined to consult a toxicologist and disinclined to perceive psychiatric help as appropriate initially. There is a clear need for a medical toxicological service to evaluate patients such as these who complain of poisoning, and to provide analytical facilities where necessary. The joint approach undertaken at the National Poisons Unit has enabled comprehensive assessments to be made, and toxicological assessment has proved an important preliminary to psychological help. This joint toxicological-psychiatric approach is efficient and labour-saving and can avert further referrals to yet more doctors. The need for this service appears to be increasing and further evaluation is planned.

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# Depression in Self-Harm Patients

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DSM-III diagnoses and responses to the Beck Depression Inventory (BDI) were examined in 71 consecutive admissions to an in-patient psychiatric crisis service following deliberate self-harm. Although 80% of the admitted patients were moderately or severely depressed according to BDI scores, only 31% were diagnosed with a major depressive episode. While all of the self-harm patients may be viewed as experiencing severe subjective distress, only a minority were shown to suffer from DSM-III depressive illness. The high depression scores on the BDI may be related to the patients' extreme distress preceding a crisis admission and to the high prevalence of personality disorders in this group of patients.

It is well established that the vast majority of individuals who commit suicide suffer from psychiatric illness, with depression being the most common diagnosis (Dorpat & Ripley, 1970; Barraclough *et al*, 1974; Robins, 1981). Even schizophrenic patients who commit suicide are more likely to suffer from a concomitant depression (Roy, 1982). In contrast to the above relationship, the association between deliberate non-fatal self-harm and psychiatric illness, specifically depression, is less clearly understood. Deliberate non-fatal self-harm (attempted suicide and parasuicide are synonymous terms) has been shown to be related to a set of circumstances different from those related to suicide, in a population which, although overlapping, differs from suicide completers (Farberow & Schneidman, 1961; Stengel, 1973; Morgan, 1975; Kreitman, 1977). Moreover, although in one review 35–80% of self-harm patients were reported to suffer from depression at the time of self-injury (Weissman, 1974), disagreement exists concerning the prevalence, type, and severity of this depression. This confusion persists due to the employment, in research, of non-parallel patient samples and diagnostic classification systems and procedures, making the comparison of results across studies extremely difficult. Despite this confusion, however, it is of great importance to attempt to clarify the relationship between self-harm and depression, as this relationship possesses treatment implications.

Reports of the prevalence of clinically diagnosed depression among self-harm patients range from 30% to 66%, as shown in Table I. Studies reporting higher rates of depression have been conducted with those self-harm patients most likely to present with serious psychiatric illnesses. Examples of this bias include the four studies using patients admitted to hospital (Bridges & Koller, 1966; Silver *et al*, 1971; Morgan, 1975; Urwin & Gibbons, 1979), and the Woodruff *et al* (1972) study, which employed psychiatric clinic patients. Higher rates of depression are to be expected in the above studies, as patients who are more severely depressed tend to be the ones admitted to hospital (Birtchnell & Alarçon, 1971). In contrast, studies reporting lower rates of depression are those which have made efforts to study all self-harm patients in a defined geographical area (Kessel, 1965; Edwards & Whitlock, 1968; Holding *et al*, 1977), not confining their samples to those clearly identified as in need of hospital admission.

In addition to the samples studied, the studies reported in Table I also differ in the criteria used to establish a diagnosis of depression. Although most protocols permitted only one diagnosis for each patient, a few (Woodruff *et al*, 1972; Morgan, 1975; Holding *et al*, 1977) allowed multiple diagnoses. In two studies (Newson-Smith & Hirsch, 1979; Urwin & Gibbons, 1979), psychiatric diagnoses were obtained using a semi-structured interview, the Present State Examination (PSE). Although one of these studies found a 60% rate of depressive disorders, the authors stated that "the general profile is that of minor neurotic illness with depressive features" (Newson-Smith & Hirsch, 1979), resembling 'cases' (as defined by the PSE) in the general population more closely than patients in hospital for depression. The other study (Urwin & Gibbons, 1979) identified 74% of the patients as 'cases' and 47% as presenting with depressive syndromes; however, the authors noted that the distribution of diagnostic classes was intermediate between a general population sample and other psychiatric patient samples. In other words, these depressive patients were less ill than psychiatrically treated depressives.

When self-report depression questionnaires have been employed, higher rates of depression have been consistently reported, with reports ranging from 50% to 80% (see Table II). In one study (Silver *et al*,

TABLE I
*Depression as indicated by psychiatric diagnosis*

| *Description of sample* | *Sample size* | *Diagnostic category and diagnoses per patient*[1] | | *% depressed* | | | *References* |
|---|---|---|---|---|---|---|---|
| | | | | *M* | *F* | *Entire sample* | |
| Self-harm patients seen at a hospital | 522 | Depression | S | 26 | 43 | 37 | Kessel, 1965 |
| Self-harm patients admitted to hospital | 198 | Endogenous and involutional depressions<br>Neurotic depression | S | — | — | 58 | Bridges & Koller, 1966 |
| All self-harm patients in one urban area over a one-year period (99% seen at hospitals) | 680 | Endogenous depression<br>Depressive neurosis | S | 30 | 35 | 30 | Edwards & Whitlock, 1968 |
| Self-harm patients admitted to general hospital | 45 | Affective disorder | S | 24 | 61 | 47 | Silver *et al*, 1971 |
| Patients from psychiatric clinic with a history of self-harm | 71 | Unipolar or bipolar, primary affective disorder<br>Secondary affective disorder | M | — | — | 66 | Woodruff *et al*, 1972 |
| Self-harm patients admitted to general hospital | 337 | Neurotic (reactive) depression<br>Manic or depressive psychosis | M | 48 | 69 | 62 | Morgan, 1975 |
| Self-harm patients admitted to Regional Poisoning Treatment Centre | 7458 | Depression including neurotic depression | M | 28 | 40 | 35 | Holding *et al*, 1977 |
| Self-poisoning patients admitted to hospital | 51 | Depressive disorders (Present State Examination) | S | | | 60 | Newson-Smith & Hirsch, 1979 |
| Self-harm patients admitted to hospital | 626 | Depressive neurosis<br>Affective psychosis (Present State Examination) | S | 31 | 54 | 47 | Urwin & Gibbons, 1979 |

1. S, single diagnosis for each patient; M, multiple diagnoses possible for each patient.

1971), a significant correlation between depression and suicidal intent was found when depression was based on scores on the Beck Depression Inventory, but not when it was based on clinical diagnosis. Dyer & Kreitman (1984) have argued that this relationship may be accounted for by one aspect of depression only, namely hopelessness.

The type and severity of depression among self-harm patients have also not been unequivocally demonstrated. With respect to this issue, non-synonymous terms such as 'endogenous depression', 'psychotic depression', etc. have been employed by different investigators, making comparisons across studies difficult. For example, in a multi-centre, international study (Goldney *et al*, 1981), 36% of women between ages 18 to 30 were found to suffer from 'endogenous' depression based on responses to the Levine–Pilowsky Depression Questionnaire, a self-report instrument. This frequency is considerably higher than the rates of 10–17% reported in previous studies of self-harm patients (e.g. Morgan, 1975; Urwin & Gibbons, 1979). Goldney *et al* (1981) have suggested that the lower rates of severe depression "may reflect the perceptual set of clinicians who believe such illnesses occur much less frequently in the younger age groups". They also suggest that clinicians may be biassed against diagnosing depression in suicidal patients, a possibility which could be related to reluctance to diagnose depression in the young. They maintain that a symptom inventory may circumvent clinician bias and provide a more objective measure of depression.

While symptom inventories may circumvent clinician bias, those which employ a self-report method are fraught with their own set of difficulties. For example, it has not been demonstrated that the

TABLE II
*Depression as indicated by questionnaires*

| *Description of sample* | *Sample size* | *Instrument* | *% depressed* | | | *Reference* |
|---|---|---|---|---|---|---|
| | | | *M* | *F* | *Total* | |
| Self-harm patients admitted to hospital | 104 | Researcher rated depressive criteria (based on medical records) | 54 | 88 | 75 | Birtchnell, 1970 |
| Self-harm patients seen in emergency | 91 | Modified Zung Depression Scale | — | — | 59[1] | Birtchnell & Alarçon, 1971 |
| Self-harm patients admitted to general hospital | 45 | Beck Depression Inventory (self-report) | 82[2] | 79[2] | 80[2] | Silver *et al*, 1971 |
| Self-harm patients admitted to a general hospital | 68 | Beck Depression Inventory (self-report) | — | — | 50[3] | Minkoff *et al*, 1973 |
| Self-harm patients admitted to two general hospitals | 3841 | Beck Depression Inventory (self-report) | — | — | 51[4] | Beck *et al*, 1975 |
| Female self-harm patients, age 18–30, seen in general hospitals | 111 | Levine–Pilowsky Depression Questionnaire (self-report) | — | 75 | — | Goldney *et al*, 1981 |

1. Zung score >30, described as clinically significant.
2. BDI score >14, described as moderate to severe depression.
3. BDI score >20, described as high score.
4. BDI score >24, described as high score.

Beck Depression Inventory (BDI), developed to measure the severity of depression (Beck *et al*, 1961), actually measures a construct which is distinct from general psychological distress (Scott *et al*, 1982; Gotlib, 1984), anxiety (Davies *et al*, 1975), or a host of other constructs related to a subject's response bias (Depue & Monroe, 1978; Coyne & Gotlib, 1983). In addition, as the BDI has been found to possess poor temporal stability (Hammen, 1980; Sacco, 1981), the measurement of depression through BDI scores alone may be highly inappropriate (Depue & Monroe, 1978).

The present study was designed to address the above problems by examining depression in adult self-harm hospital patients through DSM-III diagnoses (American Psychiatric Association, 1980) and responses to the BDI. The DSM-III provides relatively clear criteria for generating diagnoses, is multi-axial, allows for multiple diagnoses, and is currently widely used in clinical settings. The employment of the DSM-III was viewed as important as (a) no studies have reported its use with a self-harm population, and (b) its multi-diagnosis, multi-axial approach is most appropriate for patients with multi-problem presentations.

## Method

### Subjects

The subjects were 71 consecutive admissions to an in-patient psychiatric crisis unit at the Toronto General Hospital, between 1 March 1983 and 29 February 1984, with the exception of patients admitted during approximately four weeks of the year when the principal investigator (JE) was absent. All patients had been involved in an act of deliberate self-harm within the week prior to admission. The policy of the hospital specifies that all patients who present themselves to the emergency department following deliberate self-harm be referred for psychiatric consultation and admitted to the crisis unit, if a bed is available, regardless of the medical seriousness of the injury, degree of suicidal risk, or diagnosis. During the study period, all emergency department charts were routinely reviewed to determine the demographic data, method of injury and disposition of patients who met criteria for the study but were not admitted. Of 180 patients not admitted to the unit, all but 74 (41%) were admitted to other in-patient units. From the demographic information available to us, it was established that the sample studied did not differ in important ways from patients admitted during the principal investigator's absence, nor from those not admitted to the unit due to a lack of beds or other reasons.

Of the 71 patients admitted, 34 (48%) were male and 37 (52%) were female. Median age was 25 years (range 17–80). Method of injury was as follows: drugs 66%, sharp instruments 21%, falls 4%, firearms, suffocation and gas inhalation 3%, and other means 3%. Fifty-nine per cent of the sample were single, 19% were married or living in common-law relationships, and the remainder were separated, divorced or widowed. Fifty-one per cent were unemployed, 25% were employed full-time, 13% were employed part-time, and 11% were students. Thirty per cent were living alone, 39% lived with family, and the remainder were living with friends, in a residence or in other circumstances.

### Procedure

After conducting a diagnostic interview with each patient, as soon as possible after admission, the principal investigator

(JE) completed a DSM–III checklist containing criteria for all Axis I affective syndromes, adjustment disorders and substance abuse disorders, as well as all Axis II disorders. As a measure of diagnostic reliability, 21 randomly selected patients were interviewed by another staff psychiatrist not attached to the treatment team (SK). Agreement and reliability (employing the kappa statistic) were then calculated. Diagnostic agreement and reliability between the two psychiatrists for Axis I were as follows: for major depressive episode, agreement was 80%, $\kappa = 0.445$, $P < 0.05$; for alcohol abuse or dependence, agreement was 85%, $\kappa = 0.70$, $P < 0.01$. For the presence or absence of an Axis II diagnosis, agreement was 76%, $\kappa = 0.67$, $P < 0.01$. For specific Axis II diagnoses, inter-rater agreement and reliability were generally lower than those obtained for the global category. In all cases, the diagnostic categories employed in the statistical analyses of the data were those provided by the principal investigator.

Patients were also asked to complete the BDI (Beck *et al*, 1961) on admission and again on the fifth day in hospital or on discharge, if this occurred earlier. The BDI was completed by 65 of the 71 patients on admission, and by 48 of these on the fifth day in hospital. The lower number of patients completing the BDI on admission, and again on discharge, reflects non-compliant behaviour on the part of some patients (e.g. patients discharging themselves against medical advice).

The primary therapist of each patient completed a questionnaire recording the patient's demographic data, current social circumstances, and details of the self-harm act. Primary therapists were trained in psychiatry, psychology and social work.

Consent was obtained from each patient to use the information described above, normally collected for clinical purposes, as part of the present research.

## Results

Axis I diagnoses are shown in Table III. Only 22 patients (31%) met criteria for major affective disorder. As Table IV shows, 41 patients (58%) met criteria for an Axis II disorder (personality disorder).

Forty-four per cent of the men, compared with 11% of the women, were diagnosed with alcohol abuse or dependence ($\chi^2 = 10.02$; d.f. = 1, $P < 0.01$); 22% of the women, compared with 12% of the men, were diagnosed with drug abuse or dependence (NS). Men and women did not differ significantly in either the presence of major depression (including melancholia) or the diagnosis of personality disorder.

As indicated in the last column of Table V, 80% of all patients who completed the BDI on the day of admission scored in the moderate (BDI score >15) to severe (BDI score >23) range, and 51% scored in the severe range alone (according to cut-off scores recommended by Beck & Beamesderfer (1974)). Mean initial BDI scores differentiated patients diagnosed with a major depressive episode (including those with melancholic features) from other patients ($t = 2.97$, d.f. = 63, $P < 0.05$). Initial scores, however, did not differentiate those diagnosed with substance abuse or dependence from other patients. Interestingly, those patients diagnosed as having personality disorders had significantly higher mean initial BDI scores than those without personality disorder ($t = 2.33$, d.f. = 63, $P < 0.05$). Men and women did not differ significantly on initial BDI scores.

TABLE III

*Axis I diagnoses*[1] *(n = 71)*

| | | |
|---|---|---|
| Major depressive disorder | | 22 |
| with melancholia | 5 | |
| with psychotic features | 1 | |
| with bipolar disorder | 1 | |
| Dysthymic disorder | | 4 |
| Cyclothymic disorder | | 1 |
| Total affective disorders | | 27 |
| Alcohol abuse/dependence | | 19 |
| Drug abuse/dependence | | 12 |
| Both alcohol and drug abuse/dependence | | 5 |
| Total substance abuse disorders | | 26 |
| Adjustment disorder | | 7 |
| with depressed mood | 3 | |
| Mental retardation | | 1 |
| Sexual sadism | | 1 |
| Organic brain syndrome | | 1 |
| Agoraphobia | | 1 |
| No diagnosis on Axis I | | 11 |

1. Patients may have more than one diagnosis.

TABLE IV

*Axis II diagnoses*[1] *(n = 71)*

| | |
|---|---|
| Borderline | 20 |
| Atypical or mixed | 10 |
| Antisocial | 6 |
| Passive–aggressive | 3 |
| Schizotypal | 2 |
| Histrionic | 2 |
| Schizoid | 1 |
| Dependent | 1 |
| Total of patients diagnosed with personality disorder | 41 |
| No diagnosis on Axis II | 30 |

1. Patients may have more than one diagnosis.

A BDI score greater than 23 correctly identified 15 of the 20 patients (75%) diagnosed with major depression according to DSM–III criteria. According to this cut-off score, however, 18 patients (40%) were false positives (i.e., identified as depressed according to BDI scores, but not meeting DSM–III criteria for major depression). A BDI cut-off score greater than 15 improved the sensitivity of the BDI, correctly identifying all 20 of the patients diagnosed as depressed by DSM–III criteria. This lower cut-off score, however, increased the rate of false positives to 71%. Among those 18 patients identified as false positives with a BDI cut-off score greater than 23, 60% met criteria for an Axis II (personality disorder) diagnosis.

Results from a subsample of 48 subjects who completed the BDI both on admission and five days later are shown in

Table VI. Although 84% of these patients initially scored as moderately or severely depressed, after five days only 59% scored in this range. A similar decrease is evident when only those who initially scored as severely depressed on the BDI are considered. Also, as Table VI shows, significant decreases between first and second mean BDI scores were noted for the entire sample. Significant score drops between first and second BDI administrations were also found for each DSM-III diagnostic category, with the exception of those patients who met DSM-III criteria for major depression.

## Discussion

Using DSM-III criteria, 38% of self-harm patients were diagnosed with an affective syndrome and 31% with a major depressive episode. These results correspond closely to the prevalence of depression reported in earlier clinical diagnostic studies of unselected groups of self-harm patients (Kessel, 1965; Edwards & Whitlock, 1968; Holding *et al*, 1977). As DSM-III is non-theoretical in structure, it is difficult to compare our findings with previous reports on the occurrence of 'endogenous depression'. However, since only 8% of the sample met criteria for melancholia, bipolar illness or major depression with psychotic features, the rate of 'endogenous' depression can be assumed to have been low.

Interestingly, 80% of the present self-harm patients scored as either moderately or severely depressed on the initial BDI administration, and 51% scored in the severe category alone. The higher prevalence of depression when measured by questionnaire is also consistent with previously reported results.

DSM-III diagnoses provide a more accurate estimate than self-report inventories of the frequency of affective syndromes in a self-harm population. High BDI scores on admission did differentiate those with clinical diagnoses of major depression from those without such diagnoses. The achievement of a high level of BDI sensitivity, however, resulted in low specificity (a large percentage of false positives, i.e., patients with high BDI scores who did not meet DSM-III criteria for major depression). Moreover, for patients completing a BDI five days after admission, scores showed a significant drop. Newson-Smith & Hirsch (1979) reported a similarly large reduction in symptoms of distress within seven days of self-poisoning using the General Health Questionnaire and PSE.

Rapid symptomatic improvement on the BDI may be due to removal from a stressful environment, brief psychotherapeutic intervention, anxiolytic medication (which was prescribed in hospital for many patients), or a statistical regression toward the mean. Patients were not treated with any type of antidepressant medication in the first five days after admission. Improvement within a few days in the absence of specific treatment for depression would not typically be expected to occur in major depression. Thus, although patients are distressed at the time of self-harm, they are not necessarily suffering from depressive syndromes.

Van Praag & Plutchik (1985) documented a marked reduction of subjective distress within a few days of admission from that recollected prior to admission in a group of patients who had attempted suicide. They hypothesised that this could be accounted for by a "cathartic effect" of self-harm. The fact that, in our sample, subjective distress was high on admission but lower within a few days, suggests that the act of self-harm was not necessarily cathartic, but that distress became lower after a few days in hospital.

The BDI has shown good diagnostic specificity in a study of elderly psychiatric out-patients (Gallagher *et al*, 1983). The poor specificity of the BDI in the present study may be due to the patients' extreme subjective distress at the time of a crisis admission, and to the high proportion of this group diagnosed with concomitant personality disorders. Patients with personality disorder presented with higher initial scores on the BDI and accounted for a substantial percentage of the false positives. The BDI or other self-report depression inventories may, therefore, present a misleading picture of the prevalence of depressive illness in patient populations which are acutely distressed and include a large proportion of individuals with personality disorders. In fact, the BDI and the General Health Questionnaire (Goldberg, 1972) were developed as symptom inventories and not as diagnostic instruments.

A high score on the BDI should not be equated with a diagnosis of depression. In a previous study in our setting, in which we examined the dexamethasone suppression test (DST), we reached a similar conclusion (Ennis *et al*, 1985). Because of the DST's poor diagnostic specificity in a similar population, it was not a useful test for depression. The use of these instruments to identify depressive disorders can lead to misdiagnosis and ultimately to inappropriate pharmacological treatment.

Although our self-harm group was characteristic of others reported in the literature in that it consisted primarily of young adults, it differed from other groups in that it was composed of an almost equal sex ratio. Although a sex ratio of 2:1, women to men, is often cited as characteristic of self-harm populations, a survey of studies from the 1940s to the 1980s indicates a trend toward a ratio of 1:1 (Kessler & McRae, 1983). Of the studies in Tables I and II, those which included both sexes showed higher rates of depression in women than in men; the study by Goldney *et al* (1981), which reported the highest prevalence of depression, included only women. Our study, however, revealed no significant

TABLE V

*Comparison of DSM-III diagnoses with BDI scores on admission (for subsample of 65 patients)*

| *Level of depression[1] (by BDI score)* | *Major depression with melancholia (n=5)* | *Major depression without melancholia (n=15)* | *No major depression[2] (n=45)* | *Personality disorder* | | *Entire sample (n=65)* |
|---|---|---|---|---|---|---|
| | | | | *Yes (n=38)* | *No (n=27)* | |
| Severe (≥24) | 4 (80%) | 11 (73%) | 18 (40%) | 23 (60%) | 10 (37%) | 33 (51%) |
| Moderate (16–23) | 1 (20%) | 4 (27%) | 14 (31%) | 11 (29%) | 8 (30%) | 19 (29%) |
| Mild (10–15) | — | — | 6 (13%) | 0 | 6 (22%) | 6 (9%) |
| Not depressed (<10) | — | — | 7 (16%) | 4 (11%) | 3 (11%) | 7 (11%) |

1. Cut-off scores as suggested by Beck & Beamesderfer (1974).
2. Excludes three patients diagnosed with adjustment disorder with depressed mood.

TABLE VI

*BDI scores on admission and five days later (for subsample of 48 patients)*

| *Diagnosis* | n | *Mean BDI scores* | | *Mean difference between Score 1 and Score 2* | *t-tests[1]* | *95% confidence interval* |
|---|---|---|---|---|---|---|
| | | *Score 1* | *Score 2* | | | |
| Major depression[2] | 14 | 32.0 | 26.9 | 5.1 | $t=2.11$, d.f.$=13$ | 0.3–9.9 |
| No major depression[3] | 31 | 25.0 | 19.0 | 6.1 | $t=4.11$, d.f.$=30^{**}$ | 3.2–9.0 |
| Personality disorder | 31 | 27.7 | 22.3 | 5.4 | $t=3.65$, d.f.$=30^{**}$ | 2.5–8.3 |
| No personality disorder | 17 | 24.3 | 16.7 | 7.6 | $t=3.61$, d.f.$=16^{*}$ | 3.4–11.8 |
| Entire sample | 48 | 26.5 | 20.3 | 6.2 | $t=5.11$, d.f.$=47^{**}$ | 3.8–8.6 |

1. Two-tailed, based on correlated samples.
2. Includes four patients diagnosed with major depression with melancholia.
3. Excludes patients diagnosed with adjustment disorder with depressed mood.

* $P<0.01$, ** $P<0.001$.

sex differences either in the prevalence of major depression or in mean initial BDI scores.

It is possible that the present sample was biassed by our hospital admission policy. Residents in the emergency department were encouraged to admit patients who had harmed themselves, regardless of suicidal risk or level of depression. As a result, our sample may include more low suicide risk, non-depressed patients. Interestingly, our results most closely resemble those of Kreitman's group in Edinburgh, where a similar admitting policy exists (Kessel, 1965; Holding *et al*, 1977). It is also possible that other studies may have used samples which were biassed in the direction of higher risk, more severely depressed patients. For example, Clarkin *et al* (1984) reported a rate of depression of 84% among self-harm patients in a study which was carried out in an in-patient unit specialising in affective disorders.

## Conclusions

Although many self-harm patients obtained high scores on a self-report depression inventory (BDI), the prevalence of major depression, as determined by clinical diagnosis using DSM-III criteria, was only 31%. Clearly, all these patients suffered severe distress, and may have experienced a great deal of misery and unhappiness. However, only a minority suffered from depressive illness. These findings are of relevance to treatment. Patients who do not meet criteria for major depression will not be likely to benefit from antidepressant medication, despite high levels of subjective distress.

The high false positive rate observed with the Beck Depression Inventory appears to be related to the high prevalence of personality disorders in this group and to the extreme distress experienced preceding a crisis admission. Self-report measures may provide a misleading picture of depressive illness in such circumstances.

For most suicidal patients, deliberate self-harm is carried out in the context of a psychosocial crisis, throughout which the patient experiences significant subjective distress, characterised by severe but acute depressive symptoms. The presence of these symptoms, does not necessarily imply a diagnosis of a depressive illness. The problem of diagnosing depression in the presence of these symptoms can be addressed in two ways: first, by using diagnostic systems such as DSM-III, which employ operational criteria, including criteria for duration of symptoms (two weeks, in the case of major depressive disorder), and second, by withholding antidepressant medications for a few days in order to determine whether the depressive symptoms resolve with admission to hospital and crisis intervention.

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# The Switch Mechanism and the Bipolar/Unipolar Dichotomy

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During open trials of intravenous and oral S-adenosyl methionine (SAM) and a placebo-controlled trial of intravenous SAM in 29 patients, 25 patients had SAM and four had placebo (27 courses of SAM, two of the patients receiving two trials apiece). Nine of 11 bipolar patients (all SAM-treated) switched into elevated mood state (hypomania, mania and euphoria) and two did not respond. Six endogenous unipolar patients improved and five did not. No non-endogenous patient or placebo patient responded for more than 14 days. No unipolar patient switched into elated mood. In eleven (38%) trials and nine (33%) patients there was a switch from depression to elation. Biochemical data from the cerebrospinal fluid of eight patients suggested that the role of the dopaminergic system should be further explored.

Bunney *et al* (1970) suggested that in manic-depressives there existed a mechanism for switching mood out of the depressed phase. Apart from our earlier preliminary report (Carney *et al*, 1983), we are not aware of any recent British work on this subject. In this report we describe clinical and biochemical aspects of a number of switches we observed at Northwick Park Hospital during a series of trials on S-adenosyl methionine (SAM), a normal brain metabolite, reported to have antidepressant properties (Reynolds *et al*, 1985).

We were involved in three studies (both oral and intravenous) of SAM under different conditions. Two were open studies. However, this paper is not concerned with the therapeutic efficacy of SAM, but with the remarkably high incidence of hypomania and mania observed over a short period of time.

## Method

The Newcastle Diagnostic Scale (Carney *et al*, 1965) was applied to depressed patients admitted successively on clinical grounds to Northwick Park Hospital. These patients were judged to be primary depressives, free of non-depressive disorders (epilepsy, drug and alcohol abuse, schizophrenia and organic brain states), and had scored at least 20 on the Hamilton Rating Scale. They all gave informed consent and underwent a seven day drug-free 'wash-out' period before being admitted to one of the trials.

During the trials they received no other medication, apart from a patient who was already on lithium carbonate (see below). All were rated on the Beck and Hamilton scales initially and on the fourteenth day.

Twenty-seven courses of SAM were given to 25 patients (11 bipolar and 14 unipolar), and placebo was given to four patients (all unipolar). Twenty patients received SAM intravenously, and seven orally. Two patients were given SAM both intravenously and orally. The characteristics of all these patients are described in Table I. The mean age of the whole group was 51 years (range 20–82).

Five degrees of response were recognised as follows:

(1) depression no better, slightly better or worse (14 patients)
(2) improved: Hamilton score reduced by 50% or more (6 patients)
(3) elevated mood as reported by the patient and confirmed by medical and nursing staff, accompanied by increased production of speech and motor activity (2 patients; in both, this diagnosis was confirmed by video recordings seen and agreed by all the investigators)

TABLE I
*Characteristics of 29 bipolar and unipolar depressed patients*

| | n | *Age* | | *Sex* | | *Number of previous episodes* | *With first-degree mentally ill relatives* | *Initial mean* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | *Mean* | *Range* | *M* | *F* | | | *Newcastle score* | *Hamilton score* | *Beck score* |
| Bipolar | 11 | 48.2 | (22–81) | 6 | 5 | 4.4 | 4 | 8.2 | 25.1 | 31.1 |
| Switching | 8 | 45.5 | (22–81) | 4 | 4 | 3.0 | 3 | 8.4 | 23.8 | 27.6 |
| Non-switching | 3 | 52.0 | (34–67) | 2 | 1 | 6.6 | 1 | 7.8 | 28.7 | 34.1 |
| Unipolar | 18 | 56.6 | (22–77) | 7 | 11 | 2.4 | 2 | 5.5 | 22.4 | 28.8 |

(4) hypomania (4 patients): elevated mood as defined in (3), with flight of ideas, irritability, increased pressure of speech and activity to the point of interference with the subject's ability to cope with normal tasks, distractability and considerable impairment of concentration and attention

(5) mania (3 patients): increase of the above changes to the point of distortion of thinking (delusions) and perception.

At level (5), motor activity was incessant and nursing staff experienced considerable difficulty in keeping these patients on the ward. Indeed, a 22-year-old student absconded, travelled to Brighton and was returned to the psychiatric unit after being involved in a fight at Brighton station with police, who had been attracted by his bizarre behaviour.

Consideration of previous reports indicated that the last three degrees of mood elevation should constitute switching.

## Results

Sixteen patients made a good initial improvement: one of these (a neurotic depressive) relapsed within the first 14 days; for the rest the improvement was enduring. The mean Hamilton score of the responders fell from 23.3 to 4.8, while that of the non-responders remained virtually unchanged (24.8 and 22.0 respectively).

### Switches

Nine (31%) of the 29 patients progressed to elevated mood change (Table II). Nine of the 11 bipolars switched, but no unipolar switched ($P<0.001$; Fisher's Exact Probability Test). The two bipolar patients who received two courses of SAM at different times, switched on each occasion. Nine of the 11 switches followed a brief euthymic interval ranging from a few hours to six days (mean 3.2 days), the tenth switch immediately followed SAM, and the eleventh did not occur until the 42nd day of oral SAM. All the 'switchers' were endogenous bipolar patients. No unipolar patient switched, and no non-endogenous patient switched or improved for more than 14 days.

The bipolars who switched differed from the non-switching bipolars and the unipolars (Table I) in being the youngest and having the highest mean Newcastle score. Non-switching bipolars, on the other hand, had had most previous episodes of affective illness and scored most highly on the Hamilton and Beck scales. However, the numbers in these subcategories are small.

There were no differences between intravenous SAM patients and the oral SAM patients in terms of improving or switching. Among the intravenous SAM patients, response, failure to respond and occurrence of elated mood were not clearly dose related. Among the oral SAM patients, no marked effect was recorded until the threshold dose of 800 mg was reached; above this, response and six episodes of elevated mood occurred. No toxicity or unwanted effects were noted (if mania is accepted as a manifestation of the underlying mood disorder). In all the 'switchers', depression was severe enough to have caused consideration of ECT, but this was averted.

TABLE II
*Bipolar/unipolar classification and response (29 patients treated with SAM or placebo)*

| | *Switch* | *Improved* | *No response* |
|---|---|---|---|
| Bipolar | 9 | 0 | 2 |
| Unipolar endogenous | 0 | 6 | 5 |
| Unipolar neurotic | 0 | 0 | 7 |

TABLE III
*Changes in CSF metabolites during treatment*

| *Patient* | *Treatment* | *CSF metabolites (nmol/l)* MHPG *Before* | MHPG *After* | 5HIAA *Before* | 5HIAA *After* | HVA *Before* | HVA *After* |
|---|---|---|---|---|---|---|---|
| *No response (>7 days)* | | | | | | | |
| B.J. | SAM | 58.1 | 56.1 | 104.3 | 72.4 | 231 | 215 |
| M.L. | SAM | — | — | 52.3 | 75.0 | 128 | 203 |
| S.M. | SAM | — | — | 49.3 | 75.0 | 170 | 248 |
| *Improved* | | | | | | | |
| V.H.[1] | Placebo | 35.6 | 41.8 | 211.5 | 247.0 | 479 | 615 |
| E.R. | SAM | 57.3 | 58.1 | 143.4 | 165.4 | 176 | 226 |
| S.T. | SAM | 40.5 | 38.7 | 84.4 | 73.4 | 151 | 126 |
| *Switched* | | | | | | | |
| M.M. | SAM | 47.1 | 31.7 | 142.0 | 125.4 | 210 | 370 |
| K.S. | SAM | 20.2 | 18.2 | 58.7 | 64.2 | 218 | 252 |

1. Stabilised on lithium carbonate therapy.

The probability (Poisson) of these switches occurring by chance within six days of starting SAM is remote ($P < 0.001$), given a switch rate of 10–14% over a six-month period (Bunney, 1978; Lewis & Winokur, 1982). They may, therefore, have been provoked by SAM. Certainly none was seen among the placebo patients, though their numbers were very small.

Among the unipolar patients (Table II), significantly more endogenous patients responded than non-endogenous ($P < 0.025$; Fisher's Exact Probability Test).

### Biochemistry

Ethical approval had been given to perform lumbar punctures in those patients who consented. Eight patients consented (three from the intravenous SAM pilot trial and five from the double-blind intravenous SAM trial). Cerebrospinal fluid (CSF) was withdrawn in a standardised manner before the trials and on the last day of SAM or placebo injections. CSF was stored at −70°C until assayed for monoamine metabolite concentrations by high pressure chromatography and electrochemical detection (Bottiglieri *et al*, 1984*b*).

The 'switchers' (Table III) showed an increase in HVA (43% in the first patient and 13% in the second). Among the remaining six patients – of whom three improved and three did not respond – HVA also tended to increase. All these patients except one received SAM treatment. The patient who received placebo injections was also on lithium carbonate therapy and had high levels of 5HIAA and HVA before and after treatment.

## Discussion

This report is about the phenomenon of switching rather than a controlled trial of SAM. The most remarkable finding was the close association of switching with elated mood and bipolar affective illness. Sporadic cases of switching into elated mood have previously been linked with SAM (Lipinski *et al*, 1984) and folate (Reynolds, 1981). One problem is that of definition. If we define switching as changing from depressed mood into elated mood, then 82% of our bipolar patients switched. If, on the other hand, we define switching as showing remission of depressive symptoms (i.e. moving out of depression), then 68% of the depressed bipolars and endogenous unipolar patients switched or improved. We chose the first definition. All these patients received oral or intravenous SAM, no placebo-treated patient switching or showing sustained improvement. Oral and intravenous SAM are equally efficacious in this respect (Carney, 1987).

What are the possible explanations of this high rate of switching (regardless of definition)? The spontaneous switch rate in untreated unipolar and bipolar depression has been reported to be 10–14% over a six-month period (Bunney, 1978; Lewis & Winokur, 1982). Angst (1987) thought that in one third of all episodes there was a switch to an opposite mood state. He reported that mild and severe episodes seemed to have the same switch rate. Among bipolar females, generally, more depressive episodes occurred and, in addition, manic episodes showed a higher switch rate (40%) than depressive episodes (26%). Angst did not believe that the introduction of neuroleptic drugs in the 1950s changed the switch rate. He thought that the switch rate in bipolar disorders from depression to mania had remained stable over the decades of this century at 29%. Unipolar depression had shown a non-signicant increase from 2.7% (1920–1957) to 4.6% (1958–1981). He could not exclude as a cause the introduction of tricyclic antidepressants, or possibly a higher incidence of latent bipolars.

We found that the switch occurred soon after the patient started taking SAM. This is in contrast with Angst's (1987) finding that it did not occur, on average, until 50 days after admission to hospital. However, like us, Angst thought that the switch into hypomania only occurred in actual or potential bipolar patients.

Switches into elated mood have also been linked with stress of various kinds, life events, environmental factors and ECT. All the present patients were in hospital over the relevant period and thus were screened from many environmental influences, and none received ECT. It seems unlikely, therefore, that our observed switches were secondary to these factors. Neither was there evidence of the recent involvement of therapeutic drugs (apart from the patient on lithium) or illicit drugs like amphetamines.

On the other hand, all our patients were on SAM at or around the time of improvement or switching, so there is a strong suggestion of a causal link. This is reinforced by the occurrence of changes in CSF 5HIAA and HVA in SAM-treated but not in placebo-treated patients in a double-blind trial (Carney *et al*, 1983; Bottiglieri *et al*, 1984*a*). SAM is the principal methyl donor in brain and derives its methyl groups for these reactions from methyl folate through the synthesis of methionine, the precursor of SAM, as a result of the activity of methionine adenosyl transferase. Methylation processes (and folic acid and SAM metabolism) may therefore be construed as essential for the maintenance of the monoamine basis of normal mood (Reynolds *et al*, 1984). Moreover, SAM can cross the blood/brain barrier and elevate CSF levels (Bottiglieri *et al*, 1984*a*). Red cell folate was found to correlate with CSF 5-hydroxy indole acetic acid, related to serotonin. Other studies (Agnoli *et al*, 1977;

Bottiglieri *et al*, 1984*a*) have shown that SAM can affect the serotonergic system, and Botez *et al* (1979) have also shown that folic acid can influence this system.

It is likely therefore that SAM-induced switches may have therapeutic applications, provided the hypomania/mania tendency can be controlled. In the cases cited in this paper, elevated mood and behavioural disturbance responded readily to phenothiazines. In unipolar illness, switching out of depression into mania did not seem to occur, and problems of coping with behavioural disturbance therefore did not arise. SAM may therefore prove to have a place in the treatment of the depressive phase of bipolar illness or in unipolar depression, provided the depression is endogenous in type. We found no enduring response in non-endogenous depression. Thus SAM may be a very acceptable alternative to ECT and tricyclic drugs, particularly in these consumer-oriented days.

SAM may also prove to be an important research tool in the investigation of affective illnesses. That its benefits are restricted to bipolar and endogenous unipolar depression, underlies the likelihood of biological differences between these illnesses and non-endogenous or neurotic depression (Reynolds *et al*, 1984; Carney *et al*, 1987).

Final confirmation of the role of SAM in promoting switches out of depression or into elated mood awaits definitive controlled trials of methyl folate and SAM.

May we speculate as to the precise identity of the switch? We have already shown that SAM enters the CSF (Carney *et al*, 1983; Bottiglieri *et al*, 1984*a*), is linked with CSF 5HIAA and folate metabolism (Carney, 1986) and influences prolactin (Thomas *et al*, 1987). This latest study and the present results suggest an effect on dopamine metabolism.

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# Poverty of Speech in Schizophrenia and Depression During In-patient and Post-hospital Periods

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Poverty of speech, a prominent feature of the negative symptom construct in schizophrenia, was assessed longitudinally in 12 schizophrenic and 13 depressed subjects at hospital admission and about seven months after discharge in order to evaluate hypotheses concerning course and diagnostic specificity. Multiple measures of the poverty of speech construct were employed, including both clinical and quantitative indices. During the in-patient period, poverty of speech was more pronounced among depressed than schizophrenic subjects. Examination of this specific negative symptom across in-patient and follow-up evaluations indicated that poverty of speech *increased* among schizophrenic subjects, but remained relatively stable or declined among depressed subjects. These results suggest that the processes underlying poverty of speech may differ in schizophrenia and depression.

In recent years there has been considerable interest in the classification of schizophrenic symptoms as positive or negative (Strauss *et al*, 1974; Crow, 1980; Andreasen & Olsen, 1982; Lewine *et al*, 1983; Pogue-Geile & Harrow, 1984, 1985; Pogue-Geile & Zubin, 1988). Delusions, hallucinations, and florid formal thought disorder are conceptualised as pathological excesses, or positive symptoms in this heuristic division. Signs such as poverty of speech, psychomotor retardation, and flat affect are conceptualised as pathological deficits, or negative symptoms. While symptoms comprising the positive symptom construct have figured prominently in theoretical accounts of schizophrenia over the last century, the distinction between positive and negative symptoms has resulted in increased emphasis on negative symptoms in recent formulations (Kety, 1980; Crow, 1980; Pogue-Geile & Harrow, 1984, 1985).

Negative symptoms have been theorised to be unresponsive to antipsychotic medication and associated with a deteriorating course (Crow, 1980; Mackay, 1980). Crow (1980) has theorised that negative symptoms may reflect some structural brain abnormality that would mediate the hypothesised association between negative symptoms and poor prognosis. Evidence in support of structural abnormality, however, remains inconclusive (Meltzer, 1985). If, as Crow has postulated, negative symptoms arise from a structural and irreversible brain abnormality that also determines a deteriorating course, then negative symptoms should remain stable or increase over time, and not occur only during acute symptomatic episodes.

Despite the implications regarding course, to date most studies have assessed negative symptoms only during the in-patient phase of the psychiatric episode (cf. Johnstone *et al*, 1979; Pogue-Geile & Harrow, 1984, 1985; Pogue-Geile, 1989). One exception is a study by Andreasen *et al* (1985), who found that poverty of speech was relatively stable among schizophrenics between initial testing and a second testing six months later. Johnstone *et al* (1979) assessed schizophrenics on clinical, cognitive, and social variables at admission and one year later. The researchers found that the presence of poverty of speech and other negative symptoms at follow-up was significantly associated with poor outcome, while none of the features of the acute illness demonstrated this relationship. Other research has supported the prognostic importance of negative symptoms at the in-patient phase (Andreasen *et al*, 1985) and during the post-acute phase (Pogue-Geile & Harrow, 1985).

Sommers (1985) has detailed considerable diagnostic non-specificity of negative symptoms, particularly with regard to various clinical forms of depression. Yet many studies of negative symptoms have not included a depressive control group (cf. Pogue-Geile & Harrow, 1984). While the vegetative signs of depression are descriptively very similar to negative symptoms in schizophrenia, similar symptoms among depressives are not theorised to extend into post-hospital periods. Comparison of the course of poverty of speech, a feature that may occur in both diagnostic groups, provides an important test of the hypothesised diagnostic specificity and persistence of negative symptoms in schizophrenia.

The present investigation examines the course of poverty of speech, a prominent feature of the negative symptom construct, across two time periods – the in-patient and post-discharge periods. Poverty of speech is assessed in schizophrenic and depressed subjects. Another concern of the present investigation pertains to the measurement of poverty of speech. The measurement of negative symptoms is characterised by diverse instrumentation, impeding replication and comparison across studies. Various scales have been developed for negative symptoms (e.g., Andreasen, 1981), while other measures have been adopted from psychiatric inventories. In the present investigation, quantitative measures of poverty of speech are obtained in order to assess the convergence between clinical and empirical measures and to evaluate the utility of quantitative indices of poverty of speech.

## Method

Twelve schizophrenic and 13 major depressed patients were interviewed at two points in time: soon after admission to an acute care psychiatric unit, and approximately seven months after hospital discharge. There were other subjects who were tested initially, but were unwilling to participate in follow-up testing due to relocation or lack of interest. These included two schizophrenic and two depressed subjects.

### Selection and characteristics of patients

Patients recently admitted to three in-patient units who met criteria for schizophrenia or affective disorders were approached and asked to participate in the study. The goal was to approach any newly admitted patient who was schizophrenic or depressed. Research associates visited the units 2–3 times a week and tried to interview every new patient. For all practical purposes this resulted in a sample that was virtually consecutive in admission.

Poverty of speech was not a factor in the recruitment of subjects. Subjects with a history of alcohol abuse or organic complications were not included.

Diagnoses were assigned independently according to the Research Diagnostic Criteria (Spitzer *et al*, 1978) by two experienced clinicians. Diagnostic information was derived from hospital charts and from structured interviews following the Schedule for Affective Disorders and Schizophrenia (SADS) (Spitzer & Endicott, 1978) administered at the index assessment. Diagnostic judges were unaware that poverty of speech would be assessed.

Table I presents demographic information on the diagnostic groups. The schizophrenic subjects had a greater number of previous admissions ($P<0.05$). There were no other significant differences between the diagnostic groups on any of the demographic characteristics.

TABLE I
*Demographic and clinical characteristics*

| *Characteristics* | *Schizophrenic* | *Depressive* |
|---|---|---|
| Sex | | |
| Male | 8 | 6 |
| Female | 4 | 6 |
| Age: years | | |
| Mean | 28.4 | 29.4 |
| s.d. | 7.7 | 5.3 |
| Education: years | | |
| Mean | 12.6 | 12.1 |
| s.d. | 2.5 | 2.6 |
| Prior admissions | | |
| Mean | 2.6 | 0.5 |
| s.d. | 1.5 | 1.4 |
| Months between testings | | |
| Mean | 8.2 | 6.1 |
| s.d. | 2.9 | 4.0 |
| *Medication* | | |
| Antipsychotic | | |
| Initial testing: % | 100 | 8 |
| Follow-up: % | 58 | 15 |
| Antidepressant | | |
| Initial testing: % | 0 | 85 |
| Follow-up: % | 0 | 62 |
| Lithium | | |
| Initial testing: % | 17 | 0 |
| Follow-up: % | 8 | 0 |

### Interviews

The interviews were conducted by two research associates who were unaware that poverty of speech would be assessed. Each research associate interviewed some patients who were depressed and some who were schizophrenic. Each patient's follow-up interview was conducted by the interviewer who had conducted the initial interview.

The in-patient interview was initiated by the interviewer asking the subject to provide an account of the events surrounding admission to the hospital. The follow-up interview began by the interviewer asking the subject to describe how he had been feeling and what he had been doing since the last interview. Thus interviews began with open-ended questions that encouraged extended subject discourse. The remainder of both the in-patient and follow-up interviews followed a standardised format based on the SADS. Interviewers were instructed not to interrupt the subject, and to provide only minimal prompts deemed necessary to elicit discourse.

### Assessment of poverty of speech

Speech samples comprising the first 200 words of each subject's discourse were transcribed from each of the 50 audiotaped interviews. All interviewer prompts required to elicit the 200 words of the subject's discourse were also transcribed as they occurred within the interview.

Various measures of poverty of speech were obtained, including quantitative indices and a clinical measure based on the definition provided in the Scale for the Assessment of Thought, Language, and Communication (TLC) (Andreasen, 1979*b*). Poverty of speech is defined within the TLC as inappropriately restricted and laconic discourse. The subject receives a global severity score in the range 0–4 based on an entire clinical interview. Rather than attempting a global rating on a highly circumscribed segment, we based ratings on the actual number of instances that the TLC criteria for poverty of speech were met within the 200-word speech sample (Oltmanns *et al*, 1985). The criteria for poverty of speech within the TLC include failure to respond to an interviewer inquiry; inappropriately terse responses, such as responding yes or no to an open-ended question; and insufficiently elaborated responses that require the interviewer to continue to probe for information. The following is an example of insufficient elaboration:

> Interviewer: Why do you think you are in here?
> Subject: I'm in here because I shot myself. (Silence)
> Interviewer: Were you trying to kill yourself?

Ratings were made by at least two research assistants, who were blind to diagnostic and time-period information. Disagreements between the raters in the clinical rating were resolved through further discussion. An inter-rater reliability of 0.90 (kappa) was obtained for the TLC ratings of poverty of speech based on independent assessments of 48% of the speech samples by two raters. Global TLC severity ratings of poverty of speech (0–4) were also calculated for a large subsample of the subjects based on the entire interview and were found to correlate highly with the ratings employed in this report, which were based on a brief speech sample ($r = 0.85$).

Various quantitative measures selected on the basis of measurement simplicity and face validity to the symptoms of poverty of speech were obtained. A measure derived from the language evaluation literature – the number of one-word responses to interviewer prompts (N1W) – was calculated (Peterson & Marquardt, 1981). In addition to this measure of the *subject's* verbal activity, the present investigation also included measures based on *interviewer* verbal activity. The number of interviewer *prompts* required to elicit 200 words of subject dialogue (NP) and the number of words of interviewer discourse relative to the 200 words of subject discourse (NW) were obtained. The measures based on the verbal activity of the interviewer represent an attempt to quantify the interactive experience which contributes to the determination that a speaker is verbally constricted. Presumably, an inverse relationship obtains in which a speaker's communicative reluctance necessitates interviewer verbal contribution. Thus, these measures are operational definitions of the degree of interactive responsibility that must be assumed by the interviewer, and represent an attempt to quantify the subjective determination of poverty of speech.

## Results

Table II presents the correlations between the clinical rating of poverty of speech based on the TLC and the quantitative indices. These correlations indicate a high degree of relationship among the measures. The quantitative measures were significantly correlated with the clinical rating of poverty of speech, with product–moment correlations ranging from 0.91 to 0.96 ($P < 0.001$).

TABLE II
*Correlations between quantitative indices and the TLC rating of poverty of speech*

| Index[1] | *In-patient testing* | *Follow-up* |
|---|---|---|
| N1W | 0.91* | 0.96* |
| NP | 0.93* | 0.92* |
| NW | 0.92* | 0.94* |

1. N1W = number of one-word responses per speech sample; NP = number of interviewer prompts required to elicit 200 words of subject discourse; NW = number of interviewer words per 200 words of subject discourse.
*$P < 0.001$.

Means and standard deviations for the individual measures of poverty of speech at the two evaluations are presented in Table III. The data were submitted to a multivariate analysis of variance, which allows for examination of the common variance shared by the four measures. The test of the effect of diagnosis on poverty of speech at the acute phase was significant ($F(1, 23) = 4.61$, $P < 0.05$). Inspection of Table III indicates that at the in-patient testing the depressed patients exhibited greater poverty of speech than the schizophrenic patients on each of the measures. In contrast, at follow-up the schizophrenics tended to have higher scores on the measures of poverty of speech; however, the test for a main effect of diagnosis at the post-discharge evaluation indicated that the difference was not significant ($P = 0.24$).

The interaction of diagnosis and attendance stage (in-patient/post-discharge) was significant ($F(1, 23) = 6.09$, $P < 0.05$). The pattern of significant findings was not changed when the diagnostic difference in previous admissions was controlled for by entering this variable as a covariate in the multivariate analysis of variance. A significant main effect for diagnosis at the initial evaluation and a significant interaction of diagnosis and attendance stage were obtained ($F(1, 20) = 5.05$, $P < 0.05$; and $F(1, 21) = 8.48$, $P < 0.01$, respectively). Inspection of Table III indicates that poverty of speech *increased* for schizophrenics between in-patient and follow-up testing. In contrast, poverty of speech tended to remain relatively stable or decline among depressives over this time period.

Next the data were submitted to multivariate analysis of variance on each group of subjects separately to assess diagnostic differences in the course of poverty of speech between the two testings. Within-group assessment indicated a significant increase in poverty of speech among the schizophrenics between in-patient and follow-up testings ($F(1, 11) = 5.44$, $P < 0.05$). A significant change was not indicated for the depressed subjects ($P = 0.56$).

In order to evaluate the potential influence of medication on the occurrence of poverty of speech during the post-discharge testing, within-group comparisons of medicated

TABLE III
*Means and standard deviations for the measures of poverty of speech at in-patient and follow-up testings*

| *Measure*[1] | *Schizophrenic (n = 12)* | | | | *Depressed (n = 13)* | | | |
|---|---|---|---|---|---|---|---|---|
| | *In-patient* | | *Follow-up* | | *In-patient* | | *Follow-up* | |
| | *Mean* | *s.d.* | *Mean* | *s.d.* | *Mean* | *s.d.* | *Mean* | *s.d.* |
| TLC | 0.1 | 0.3 | 1.8 | 3.6 | 3.5 | 7.0 | 0.7 | 1.7 |
| N1W | 0.8 | 2.9 | 5.9 | 11.6 | 3.9 | 7.3 | 2.2 | 4.9 |
| NP | 3.2 | 3.0 | 16.5 | 17.6 | 12.8 | 16.8 | 9.5 | 10.9 |
| NW | 27.2 | 4.8 | 209.6 | 260.5 | 125.9 | 153.0 | 113.6 | 110.1 |

1. TLC = clinical rating of poverty of speech (Andreasen, 1979*b*); N1W = number of one-word responses per speech sample; NP = number of interviewer prompts required to elicit 200 words of subject discourse; NW = number of interviewer words per 200 words of subject discourse.

and non-medicated subjects in each diagnostic group were conducted. These analyses indicated no differences between medicated and non-medicated subjects in either group in the occurrence of poverty of speech ($P<0.05$).

## Discussion

Schizophrenic and depressed subjects differ in the manifestation of poverty of speech, both at the acute phase and in the course over time. At the acute phase, poverty of speech was greater among depressed than schizophrenic subjects. However, this difference was not observed at the post-discharge assessment.

At follow-up, the schizophrenic subjects tended to demonstrate greater poverty of speech than the depressed subjects. Consistent findings have been reported by Pogue-Geile & Harrow (1984), who found higher clinical ratings of poverty of speech at follow-up among schizophrenic than depressed subjects. It may be that at the post-discharge assessment both schizophrenic and depressive patients are returning to their premorbid rate of verbal productivity. Although the depressed subjects did not demonstrate a significant change, inspection of the means in Table III indicates that they tended to decline on the measures of poverty of speech between the two assessments. An opposite change in occurrence was demonstrated by the schizophrenic patients. Schizophrenic patients increased on the measures of poverty of speech between initial and follow-up testing. Poverty of speech may represent a marker of the acute symptom episode in depression, but represent processes that become more prominent *after* the acute psychotic episode among schizophrenics.

Diagnostic differences have not been found at the acute phase for other negative symptoms, such as flat affect (Andreasen, 1979*a*). All the schizophrenic subjects included in the investigation evidenced positive symptoms at the acute phase. Other researchers have suggested that 'depressive' symptoms may be an integral part of the illness for some schizophrenics; however, these symptoms are overlooked at the acute phase due to the florid psychosis (Shanfield *et al*, 1970; Knights & Hirsch, 1981; Wing, 1982; Carpenter *et al*, 1985). It may be that during periods of florid psychosis, the underlying deficit condition associated with poverty of speech is masked by positive symptoms among schizophrenics. Moller & von Zerssen (1982) have suggested that an unmasking of this sort occurring with remission of the more flagrant features of disorder may explain the phenomenon of post-psychotic depression among schizophrenics.

Psychosocial factors have also been found to influence the severity of negative symptoms in schizophrenic subjects (Wing & Brown, 1970). There may be an interactive relationship between chronicity and negative symptoms that correspond with interpersonal difficulty. Premorbid interpersonal difficulty may increase likelihood of hospital admission (Wing, 1962). Further, prolonged or frequent hospitalisation has been found to exacerbate social withdrawal (Wing & Brown, 1970). The clinical picture may also be modified by the degree of social stimulation present in the post-hospital environment as well as by that in the hospital (Vaughn & Leff, 1976). In the present study the schizophrenic patients had a greater number of previous admissions than the depressive patients. Thus the severity of poverty of speech in our schizophrenic sample at follow-up may reflect greater premorbid interpersonal vulnerability, the impact of frequent hospitalisation, the degree of social stimulation in the post-hospital environment or some combination of these influences. Further investigation is needed to assess the relationship of poverty of speech to premorbid vulnerability and to elaborate the relative significance of psychosocial and biological influences.

Although our subsamples were small, comparisons of medicated and non-medicated patients in each diagnostic group at follow-up indicated no differences in poverty of speech, suggesting that the increased degree of poverty of speech among schizophrenics at follow-up may not be explained by neuroleptic treatment. Other research has indicated no drug effect on the manifestation of poverty of speech among schizophrenics; rather, the effects of medication were limited to positive symptoms (Johnstone *et al*, 1978). However, contradictory findings have been reported regarding the failure of negative symptoms to respond to medication (Goldberg, 1985; Meltzer, 1985). While early studies suggested that neuroleptic treatment induces depressive-appearing or negative symptoms among schizophrenics (e.g., de Alarcon & Carney, 1969), more recent research examining the influence of medication on the appearance of negative symptoms has failed to support that conclusion (Knights & Hirsch, 1981; Moller & von Zerssen, 1982). Carpenter (1985) has suggested that a more subtle distinction among primary and secondary negative symptoms may be necessary in order to evaluate the association between medication and these symptoms. Further research is needed to assess the relationship of medication to poverty of speech.

The results of the present investigation support the utility of quantitative indices of poverty of speech. The importance of deriving straightforward measures of negative symptoms has been stressed in recent critiques (Sommers, 1985; Zubin, 1985). The measurement of negative symptoms has been complicated by lack of agreement concerning the composition of scales, potential theoretical bias in the training of raters, and the difficulty and implicit relativity of rating a behavioural deficit (Sommers, 1985). Word and prompt counts have several advantages over more global ratings. They are face-valid, form interval scales, and are less dependent on rater inference. Their objectivity reduces potential rater bias, and the measures are highly reliable. However, if these measures are to serve as dependent variables it is important that careful control procedures be followed in conducting the clinical interviews on which they are based. Because the measures are based on spontaneous speech behaviour, attention should be paid to reducing potential interviewer influences.

The present investigation represents one of the first longitudinal assessments of the course of a specific negative symptom across in-patient and post-discharge time periods. The results indicate diagnostic differences between schizophrenic and depressed subjects in the course of poverty of speech, a prominent feature of the negative symptom syndrome. Diagnostic differences were indicated in the degree of poverty of speech manifest at the start of the acute in-patient period and in the course across in-patient and post-discharge periods. The results suggest that while poverty of speech occurs in both diagnostic groups, the processes which underlie this phenomenon may differ in schizophrenia and depression. Further study of these processes may prove relevant to an understanding of the nature and course of psychiatric disturbance across time.

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# A Trial of Family Therapy v. a Relatives Group for Schizophrenia

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Schizophrenic patients living in high contact with relatives having high expressed emotion (EE) were recruited for a trial of social interventions. The patients were maintained on neuroleptic medication, while their families were randomly assigned to education plus family therapy or education plus a relatives group. Eleven out of 12 families accepted family therapy in the home, whereas only six out of 11 families were compliant with the relatives group. Non-compliance was associated with a poorer outcome for the patients in terms of the relapse rate. The relapse rate over nine months in the family therapy stream was 8%, while that in compliant families in the relatives group stream was 17%. Patients' social functioning showed small, non-significant, gains. The data from the current trial were compared with data from a previous trial. The lowering of the relapse rate in schizophrenia appears to be mediated by reductions in relatives' EE and/or face-to-face contact, and is not explained by better compliance with medication. Reduction in EE and/or contact was associated with a minuscule relapse rate (5%). Very little change occurred in families who were non-compliant with the relatives group. On the basis of these findings, we recommend that the most cost-effective procedure is to establish relatives groups in conjunction with family education and one or more initial family therapy sessions in the home. It is particularly important to offer home visits to families who are unable to or refuse to attend the relatives groups.

A number of studies in a variety of cultural settings have established a significant association between relatives' expressed emotion (EE) measured at the point of a patient's admission and the outcome of schizophrenia over the ensuing 1–2 years (Brown *et al*, 1972; Vaughn & Leff, 1976*a*; Leff & Vaughn, 1981; Vaughn *et al*, 1984; Moline *et al*, 1985; Macmillan *et al*, 1986*a*; Karno *et al*, 1987; Leff *et al*, 1987; Tarrier *et al*, 1988). Only a single study (Dulz & Hand, 1986) has so far failed to replicate the association. However, an association of this kind established by naturalistic studies is subject to a number of different interpretations in respect to the direction of cause and effect (e.g. Leff & Vaughn, 1986; Macmillan *et al*, 1986*b*, 1987; Mintz *et al*, 1987).

In our view, the controversies over this issue can only be resolved by intervention studies, in which attempts are made to ameliorate the family environment and a reduction is looked for in the patients' relapse rate. We designed the first study of this kind as a controlled comparison between a package of social interventions given to experimental families and routine care, which involved little or no attention being given to relatives. It was intended that patients should remain on maintenance neuroleptic drugs throughout the trial, but inevitably there were some failures of compliance. For those patients who remained on antipsychotic medication, the social intervention significantly reduced the relapse rates over nine months and two years (Leff *et al*, 1982, 1985). The results of the two-year follow-up were not entirely clear-cut, since two patients in the experimental group committed suicide. When they were included with the relapsed patients, the difference in outcome between experimental and control groups was no longer significant.

The immediate aim of the social intervention was to reduce EE and/or face-to-face contact from high to low levels. This aim was achieved in nine of the twelve experimental families. The suicides occurred in two of the remaining three families. The relapse rate of drug-compliant patients in the families in which EE and/or contact became low was nil at nine months, and 14% at two years, both rates being significantly different from those of the control group.

These findings were interpreted as supporting the evidence from the naturalistic studies that high EE attitudes have a deleterious effect on the course of schizophrenia. However, it was also recognised that the patients' behaviour had some effect in provoking criticism and overinvolvement in the relatives. Over the past decade a number of other intervention studies have been completed, with much the same design and results as ours. Three of these (Goldstein *et al*, 1978; Falloon *et al*, 1982, 1985; Hogarty *et al*, 1986) have been reviewed by Leff (1985) and by Strachan (1986), who identified a number of common elements in the interventions, despite the different orientations of the therapists and the variety of technical terms employed to describe their activities. A fourth study with a similar design and outcome has recently been completed by Tarrier *et al* (1988).

The success of this batch of studies in altering the family environment of schizophrenic patients with beneficial results for patients and relatives, prompts the practical question of the most efficient and effective way of delivering an intervention. We attempted to answer this question by mounting a second intervention study, the design of which evolved from that of the first study.

TABLE I
*Demographic and historical characteristics of patients*

| | *Family therapy* | *Relatives group* |
|---|---|---|
| Number | 12 | 11 |
| Male/female | 8/4 | 5/6 |
| Living group: | | |
| parents | 12 | 9 |
| spouse/sibling | 0 | 2 |
| Age: | | |
| 16–24 | 8 | 5 |
| 25–34 | 2 | 3 |
| 35–65 | 2 | 3 |
| mean | 26 | 27 |
| Education: CSE or above | 7 | 3 |
| Ever married | 1 | 1 |
| Ever divorced or separated | 1 | 0 |
| Drop from highest sociosexual achievement | 6 | 6 |
| Occupation 3 non-manual or above | 3 | 6 |
| *Unemployment before admission in months: | | |
| 0 | 2 | 1 |
| 1–12 | 4 | 2 |
| 13+ | 4 | 4 |
| mean | 47.0 | 33.6 |
| Abnormal premorbid personality | 5 | 7 |
| Number of previous admissions: | | |
| 0 | 6 | 4 |
| 1–2 | 4 | 3 |
| 3+ | 2 | 4 |
| mean | 2.0 | 2.5 |
| Mean age at first onset | 20 | 23 |

*Excluding students and housewives.

## Method

The first trial of intervention was carried out in south-east London and was based at the Bethlem Royal and Maudsley Hospital. The second trial was based at Friern Hospital and drew patients from its catchment population of 450 000 in north London. The selection criteria for the two trials were identical: patients had to be aged 16–65, living with relatives continuously for three months prior to admission, resident within reasonable commuting distance from the hospital, and spending more than 35 hours per week in face-to-face contact with one or more relatives (determined by constructing a time budget of a typical week). The patients also had to be assigned to a schizophrenic class by the Catego program (Wing *et al*, 1974), and at least one relative in the household had to be classified as high EE on the basis of the Camberwell Family Interview (Vaughn & Leff, 1976*b*).

The intervention package in the first study consisted of three main components: a short educational programme of two sessions held in the patient's home (Berkowitz *et al*, 1984), a relatives group held regularly once a fortnight (Berkowitz *et al*, 1981), and family sessions in the home which included the patient and varied in frequency according to the therapists' judgement of the family's needs. The aim of the second trial was to identify the components in the intervention package which might be responsible for its success. Ideally, the three main components should have been examined separately, but we anticipated difficulty in accumulating sufficient families for this purpose, and furthermore we considered the educational programme to represent a small demand on staff time. Therefore our strategy was to compare education plus a relatives group with education plus family therapy in the home. The effect of the education programme would be assessed by using the Knowledge Interview (Berkowitz *et al*, 1984) before and afterwards. This design allows us to equalise the attention given to relatives by scheduling family sessions and group sessions with the same frequency. The main question addressed by the study concerns the amount of professional resources required to prevent schizophrenic relapse in patients living in high-EE, high-contact families. Family therapy in the home is clearly much more demanding of professional time than a relatives group.

Once a patient was found to be suitable for the trial, the family was randomly allocated to the relatives group or to family therapy. The two education sessions were given, usually while the patient was still in hospital. Relatives were then invited to attend the group or arrangements were made to start family therapy. The group was held once a fortnight in a building belonging to Bloomsbury Health Authority located in central London and easily accessible by public transport. Family sessions were arranged once a fortnight initially and continued at this frequency for the first nine months for most families in this stream. For a few families, the sessions were spaced at monthly intervals towards the latter half of the nine-month period. Family sessions lasted about one hour, and group meetings an hour and a half.

There were four therapists: three psychologists (RB, NS, AS) and one psychiatrist (JL). All had experience of working with families, and two had been involved in the first trial. The therapeutic approach was the same as in the

TABLE II

*EE components at initial assessment and at nine-month follow-up*

| | *Initial* | *Follow-up* | *Significance* | |
|---|---|---|---|---|
| *Critical comments* | | | | |
| Median (range): | | | | |
| family therapy | 12.17 (0–37) | 2.25 (0–14) | $P=0.0001$ | $t$ test (log transformation) |
| relatives group | 10.75 (0–19) | 2.75 (0–5) | $P=0.024$ | |
| Number above threshold (6): | | | | |
| family therapy ($n=16$) | 12 | 4 | $P=0.006$ | Fisher's exact test |
| relatives group ($n=11$) | 8 | 0 | $P<0.005$ | |
| Mean change score: | | | | |
| family therapy | 9.25 | | NS | $t$ test |
| relatives group | 7.09 | | | |
| *Hostility* | | | | |
| Present: | | | | |
| family therapy | 6 | 3 | NS | Fisher's exact test |
| relatives group | 4 | 0 | $P=0.045$ | |
| *Overinvolvement* | | | | |
| Median: | | | | |
| family therapy | 2.75 | 2.25 | NS | Wilcoxon matched-pairs signed-rank test |
| relatives group | 3.67 | 2.67 | NS | |
| Number above threshold (3): | | | | |
| family therapy ($n=16$) | 9 | 7 | NS | Fisher's exact test |
| relatives group ($n=11$) | 10 | 6 | NS | |
| *Warmth* | | | | |
| Median: | | | | |
| family therapy | 1.17 | 2.75 | $P<0.05$ | Wilcoxon matched-pairs signed-rank test |
| relatives group | 1.80 | 3.00 | $P<0.02$ | |

first trial, namely a combination of educational, behavioural, structural and systemic techniques. An account of the management of the group can be found in Berkowitz *et al* (1981), while our family therapy was very similar to that described in detail by Anderson *et al* (1986). A paper describing the clinical nature of our interventions is in preparation.

The initial assessments of patients and relatives were conducted by the therapists, but to preserve blindness to group assignment, all follow-up assessments were made by independent raters. The patients' clinical course was monitored by a psychiatrist (IG), who repeated the Present State Examination (PSE; Wing *et al*, 1974) at nine months and at two years, or at any intervening relapse. The relatives were reassessed with the Camberwell Family Interview (CFI) at the same follow-up times by a psychologist (CV). We made no formal assessment of the social perfomance of patients in the first trial, partly because existing instruments rely on accounts given by relatives or care staff. In our studies, the relatives would have to be used for qualitative assessments of social performance, at least initially, since very few patients were in contact with care staff on admission. This would inevitably result in contamination by the EE status of relatives, which we were concerned to avoid. Therefore we have used the time budget, other information from follow-up assessments, and the therapists' regular reports about the families, to provide information about patients' social and occupational activities, which is quantitative rather than qualitative in nature.

In this paper we present the results of the nine-month follow-up of the second trial, and in addition an analysis of the combined data from the two trials.

## Results

### Trial of family therapy v. relatives group

*Subjects*

Over the course of four years, 24 patients living in high contact with high-EE relatives were admitted to Friern Hospital and also passed the other screening criteria. Of their families, only one refused to take part in the study. The randomisation procedure, using a table of random numbers, segregated the remaining families into 12 for family therapy and 11 for the relatives group. The patients in the two streams were compared on a large number of demographic and historical features as shown in Table I. None of the comparisons showed significant differences, endorsing the effectiveness of the randomisation procedure.

The PSE data were processed by the Catego program and a print-out was obtained of syndromes and of diagnostic classes. The two groups of patients were compared for the presence or absence of each of the 38 syndromes using

Fisher's exact test. They differed significantly (exact $P = 0.024$) on only one syndrome, delusions of persecution, which was commoner in the family therapy stream. In terms of Catego classes, eight patients in the family therapy stream were classified as S+ compared to ten in the group therapy stream, a non-significant difference. One patient in each stream presented with catatonic symptoms.

### *Relatives*

Of the 23 patients in the trial, 21 lived in a parental household, in one case with foster-parents. Eleven patients lived with two parents, both of whom were interviewed with the CFI, with one exception. In this case, the foster-father, with whom the patient was in low contact, was not seen. In all, 33 relatives were assessed, of whom 31 were found to be high-EE. Both of the low-EE relatives lived with a high-EE spouse. Ratings on the key EE components are shown in Table II. The median has been calculated in preference to the mean, as the distributions do not conform to a normal curve. At initial assessment the two groups of relatives were closely similar on each EE component.

### *Therapeutic interventions*

Relatives in the family therapy stream received a median of 17 sessions in the first nine months, with a range of 8–26. A patient in one family objected to our visits, so although her mother wanted them to continue, we stopped after ten visits, four months after the patient's discharge. The sessions were welcomed by the remaining 11 families, some of whom we continued to visit for three years.

The relatives group was not accepted to the same extent. In 5 of the 11 families in this stream, relatives failed to attend a single group. In one case the relative, a mother, was housebound by agoraphobia and refused the offer of a lift to the group. Another was a husband who could not obtain leave from his work. Among the six compliant families, attendance ranged between once and 13 times, with a median of 4.5.

TABLE III

*EE and face-to-face contact at nine-month follow-up*

| *Group and number* | *Relative* | *EE*[1] | *Contact*[2] |
|---|---|---|---|
| *Family therapy* | | | |
| 25 | Father | High | Low |
| 26 | Mother | — | — |
| 27 | Mother | Low | Low |
| 28 | Mother | High | Low |
| | Father | Low | Low |
| 29 | Mother | Low | High |
| 30 | Mother | High | Low |
| | Father | High | Low |
| 31 | Mother | Low | Low |
| 32 | Foster-m | High | High |
| 33 | Mother | High | High |
| | Father | High | High |
| 34 | Mother | High | Low |
| 35 | Mother | High | High |
| | Father | Low | High |
| 36 | Mother | High | Low |
| *Relatives group* | | | |
| 37 | Mother | High | Low |
| | Father | Low | Low |
| 38 | Mother | High | High |
| | Father | High | High |
| 39 | Mother | Low | High |
| 40[2] | Husband | Low | High |
| 41 | Sister | Low | High |
| 42 | Mother | Low | High |
| 43[2] | Mother | High | High |
| | Father | — | — |
| 44[2] | Mother | — | — |
| 45 | Mother | — | — |
| 46[2] | Mother | High | High |
| 47[2] | Mother | High | Low |
| | Father | — | — |

1. — not interviewed.
2. Did not attend group.

### *Follow-up of relatives*

All relatives in the family therapy stream went through the planned assessment procedures at the nine-month follow-up, with one exception. This was the mother of the patient who objected to our visits. The relatives in the relatives group stream were less co-operative. In two dual-parent families, one of the parents refused to be interviewed, and in two single-parent families we failed to obtain a follow-up interview. Three of these four families were among those that did not attend the group once. Overall we successfully reinterviewed 27 (84%) of the 32 relatives. The scores of the remaining five relatives had been excluded from any group comparisons.

The changes recorded in EE components are shown in Table II. To assess the significance of changes, non-parametric tests have generally been used, since the scores on the EE subscales are not normally distributed. However, we made an exception in the case of critical comments, since this is a ratio scale. The scores were subjected to log transformation to correct a skew towards zero, and $t$ tests were then applied. This test was also used to compare the change scores for the two groups of relatives, as these approximated to a normal distribution.

The number of critical comments made by both groups of relatives decreased significantly over the follow-up period, as did the number of relatives scoring six or above. The amount of change was not different for the two groups. As would be expected from its close relationship with high criticism, hostility also decreased. The reduction in the number of hostile relatives only reached significance in the relatives group stream, but this should not be accorded much weight since it affected only one more relative than in the family therapy stream. As in the previous study, no significant changes were recorded in overinvolvement. In all, of the 26 initially high-EE relatives who were successfully followed up, 10 had become low-EE.

In the naturalistic studies, high scores on one component of EE, warmth, were found to be related to a good outcome for schizophrenia. In all previous studies, except that in Chandigarh, warmth was negatively correlated with critical comments. Consequently one would expect the ratings on warmth to increase when the number of critical comments are reduced. As we have seen, the relatives in both streams showed a highly significant reduction in critical comments at follow-up. In both groups, warmth increased significantly over the follow-up period. This indicates that the adverse attitudes of relatives were not merely being neutralised, but that relatives were becoming more supportive of the patients.

The number of hours per week that the patient was in face-to-face contact with each relative was calculated from the time budget of the follow-up CFI. Of the relatives successfully interviewed at nine months, 23 were in high contact with the patient initially. Eleven of these had reduced contact to below 35 hours per week by the follow-up. There was some overlap between reduction in EE and face-to-face contact within families, as can be seen from Table III.

The aim of our interventions was to achieve a reduction from high to low levels in EE and/or face-to-face contact. We can evaluate this only in the families that were fully followed up (i.e. both parents interviewed in dual-parent families). Our aim was achieved in 8 out of 11 such families in the family therapy stream, and in 5 out of 7 in the relatives group stream, a comparable proportion. For comparison, in the first trial we achieved our aim in 9 out of the 12 families who received the package of interventions.

### *Follow-up of patients*

*Relapse rate.* As in the first trial, we did not have clinical responsibility for most of the patients and so could not insist on the institution of depot neuroleptics, although we recommended it whenever possible. Of the 23 patients, 18 were prescribed depot neuroleptics and five oral medication. Five patients were non-compliant with their medication regime, three on tablets and two on injections.

During the nine-month follow-up, relapse occurred in five patients, one being in the family therapy stream, the other four in the relatives group stream. Three were Type I relapses, the reappearance of psychotic symptoms in patients free of them, while two were Type II relapses, the exacerbation of existing psychotic symptoms. Two of the relapses occurred to patients who were non-compliant with their drug regime, a non-significant difference from the relapse rate of drug-compliant patients. Three relapses occurred to patients from families who were non-compliant with the social intervention, a significantly ($P = 0.045$) worse outcome than for patients from compliant families.

If we ignore the factor of compliance with either type of treatment, the overall relapse rate in the family therapy stream was one out of 12 (8%), identical with that of the experimental group in the first trial. In the relatives group stream the relapse rate was 4 out of 11 (36%), a non-significant difference from that in the family therapy stream. We have already seen that compliance with the relatives group was poor and that this was associated with a higher relapse rate for patients. Therefore it is worth considering separately the outcome for patients whose relatives attended the group at least once. The relapse rate for these patients was one out of six (17%).

*Social and occupational activities.* Apart from reducing the relapse rate of schizophrenia, did the interventions have any effect on the patients' social and occupational activities? We attempted to answer this question by using data from the time budget, and from the therapists' regular reports. Information was collected under the headings of living group, sexual relationship, friends, and occupation. No data were obtained for one patient in the relatives group stream, leaving 22 patients who were included in this analysis.

To summarise the findings, there was a move to independent living by two patients, one to a hostel, the other to cohabitation with his girlfriend; a small improvement in social activity for three patients; and a small net loss in sexual relationships. Two of the three employed patients lost their jobs, while five patients with no occupation on admission were attending a day centre or day hospital on follow-up. None of these changes would be registered as significant by statistical tests.

### **Analysis of combined data from the first and second intervention trials**

By selecting patients in high contact with high-EE relatives, we were aware that our trials would be limited to small numbers of participants. Some of the most interesting questions cannot be answered adequately by analysing data from each trial separately. Fortunately, the two trials are similar enough in design and method to justify the amalgamation of data. They both employed the same selection criteria, the same assessment instruments and the same basic strategy, namely the addition of social interventions of various types to maintenance treatment with antipsychotic drugs. The total number of patients from the two trials was 47. Before testing hypotheses about outcome, it is necessary to determine whether the two samples of patients are comparable on demographic, historical and clinical variables.

In terms of the variables listed in Table I, the experimental patients in Trial 1 were significantly older ($P < 0.01$) than the other patients from both trials. There were significantly more single patients ($P < 0.001$) and unemployed patients ($P < 0.005$) in Trial 2 than in Trial 1. No other differences reached significance. Three logistic regression analyses were performed to determine whether any of these factors influenced the outcome variables: EE, face-to-face contact or relapse. No significant effects emerged.

An examination of the PSE syndromes showed that Trial 1 patients exhibited significantly more General Anxiety ($P = 0.003$) and Specific Anxiety ($P = 0.028$) than Trial 2 patients, who significantly more often had a Doubtful Interview ($P = 0.013$) than Trial 1 patients. The relationship of each of these syndromes to relapse of schizophrenia was analysed using Fisher's exact test, and found not to be significant.

TABLE IV
*Outcome variables in the two intervention trials*

| | *Trial 1* | | *Trial 2* | | |
|---|---|---|---|---|---|
| | | | *Family* | *Relatives group* | |
| | *Experimental* | *Control* | *therapy* | *Attenders* | *Non-attenders* |
| | (n = 12) | (n = 12) | (n = 12) | (n = 6) | (n = 5) |
| *Treatment received* | | | | | |
| Education | 12 | — | 12 | 6 | 5 |
| Relatives group | 10 | — | — | 6 | — |
| Family therapy | 11 | — | 12 | — | — |
| *Nine-month follow-up* | | | | | |
| High EE | 6/12 (50%) | 8/10 (80%) | 8/11 (73%) | 2/5 (40%) | 3/4 (75%) |
| High contact | 7/12 (58%) | 8/10 (80%) | 4/11 (36%) | 4/5 (80%) | 4/4 (100%) |
| Low EE and/or low contact | 9/12 (75%) | 4/10 (40%) | 8/11 (73%) | 4/5 (80%) | 1/4 (25%) |
| Relapse | 1/12 (8%) | 6/12 (50%) | 1/12 (8%) | 1/6 (17%) | 3/5 (60%) |

Since none of the factors that distinguished between the various samples of patients was related to the outcome variables of interest, we could pool the data from the two trials. The combined data are presented in Table IV. It will be noted that we have separated attenders at the relatives group from non-attenders. This departs from the original randomisation procedure, so that any findings relating to these two subgroups have to be interpreted cautiously. Nevertheless, we considered it to be a worthwhile procedure that might throw some light on the associations between non-attendance and the outcome variables measured.

In the first trial, one mother in the experimental stream put off attendance at the group and family therapy for several months, during which time the patient relapsed. A husband in the same stream was unable to take time off work to attend the relatives group. Thus not all families in this stream received the full package of treatments.

It appears from the changes in EE and contact displayed in Table IV that family therapy on its own has a greater effect in reducing contact than in diminishing EE, while the reverse is true of attendance at the relatives group on its own. Relatives who were assigned to the group in Trial 2 but did not attend showed no change in contact and a minimal change in EE. The significance of these results was established by three linear logistic analyses, with EE, contact and relapse as dependent variables and education, family therapy (Yes/No) and relatives group attendance (Yes/No) as independent variables.

The analyses showed that attendance at the relatives group was significantly associated with a reduction in EE ($P < 0.02$), while family therapy was significantly associated with a reduction in contact ($P < 0.01$). Significant effects on relapse were obtained for each of the three therapeutic elements when introduced separately.

We posed another question: whether reduction in EE or in contact is more influential in reducing relapse. Unfortunately we could not answer this question because the relapse rate was so low when either aim of therapy was achieved. Among the experimental groups there were nine cases of low EE with high contact, and nine cases of high EE with low contact. Of these 16, only one relapsed (in the latter group), while none of the four cases with both low EE and low contact relapsed. It might be reasonable to conclude that a reduction in either variable affects relapse independently. The effect of non-compliance with medication was also tested with a linear logistic analysis and was not found to be significant.

## Discussion

Our principal aim in this study was to identify the optimal way of delivering help to families that would improve the outcome of schizophrenia. Families that were randomly assigned to education plus family therapy accepted and usually welcomed our intervention, with the exception of a single patient. The relapse rate of schizophrenia in these families was very low (8%) and identical with that of the experimental patients in Trial 1, whose families received the whole intervention package. It can be concluded from this result that family therapy in the home is an effective and efficient way of reducing the relapse rate of schizophrenia. However, it undoubtedly represents a considerable demand on professional resources.

Education plus the relatives group was not an efficient way of delivering help, since a high proportion of relatives (5 out of 11 families) failed to attend even once. The overall relapse rate of patients in the relatives group stream was 36% not significantly different from that of the family therapy stream, nor from the relapse rates of the experimental and control groups in Trial 1. This is due to the small numbers in our trial, which limit its statistical power. The relapse rate in the relatives group stream would have to reach at least 50% to differ significantly from that in the family therapy stream. On the basis of our data, we can neither recommend nor dismiss relatives groups as the sole form of intervention. However, it is noteworthy that relapses in this stream were concentrated in those families who were non-compliant with the group. Indeed, patients in these families had a significantly worse outcome ($P<0.05$) than patients in families compliant with the social intervention offered in Trial 2. It is not possible to infer that the poor outcome was a direct result of not receiving the social intervention, since some factor leading to non-compliance by the relatives might be linked with a worse prognosis for the patients. However, since the randomisation procedure effectively produced two closely matched groups, it is highly likely that the family therapy stream contained a similar proportion of families who would have failed to attend the relatives group had it been offered them. Yet the uptake of family therapy was virtually universal and the relapse rate of schizophrenia in this stream was very low.

In families who attended the relatives group, the relapse rate (17%) was comparable with that of patients in the family therapy stream. Furthermore, relatives in the relatives group stream showed as great a reduction in critical comments as their counterparts in the family therapy stream. This second trial did not include a randomly assigned control group receiving no intervention, so we cannot with any certainty ascribe this reduction entirely to the various social treatments received. However, the control relatives in Trial 1 exhibited a relatively modest spontaneous reduction in critical comments (two out of nine falling to below the threshold) compared with the changes shown by the two groups of relatives in Trial 2 (8 out of 16 and 8 out of 11). As in the first trial, no significant fall in overinvolvement scores was recorded in either group. However, in contrast to the experimental group in Trial 1, both streams in Trial 2 showed significant gains in warmth. We have no explanation for this difference between the response of experimental relatives in the two trials. It cannot be attributed to the much higher proportion of parents in the second trial, since parents in the first trial showed no greater increase in warmth than spouses. We are also puzzled by the differential effects of the relatives group and family therapy in reducing EE and contact respectively. We can only proffer the tentative suggestion that relatives in a group faced with a reflection of their own high-EE attitudes become more amenable to change.

The findings of our two trials suggest that clinical teams need to be flexible in the use of relatives groups and family sessions in the home for schizophrenic patients. In the second trial, when relatives could not attend the group for legitimate reasons, for instance agoraphobia or business commitments, the therapists chafed over the restrictions imposed by the research design, and felt strongly that home sessions were called for. When relatives do attend the group, the patients do well over nine months, although this may be a consequence of the relatives' compliant attitude. It would seem worth setting up groups for this type of relative, but it is necessary to visit at home those who cannot attend or are reluctant to do so. In Trial 1, attendance at the relatives group was considerably better than in Trial 2. Only one of the 12 families offered this form of help failed to attend at all: a husband whose working hours conflicted with the group sessions. Also, the frequency of attendance was much higher in the first trial (median 10.8 times) than in the second trial (median 4.5 times). All the families in the first trial received at least one family session in the home before they were invited to the group, and it is the conviction of the therapists involved that this facilitated attendance.

Therefore, we recommend that relatives groups be set up in conjunction with one or more initial family therapy sessions in the home. These may have to be repeated at intervals to boost attendance at the group, but in most families will probably be infrequent. In our trial, the therapists were not part of the clinical team looking after the patient in most cases. Had they been so, families would have viewed their involvement as more natural and acceptable. A close liaison between all professionals caring for the patient and relatives is essential, and we would strongly recommend that any sessions in the home are given by the same personnel as run the group. Other studies of family intervention have reported problems in engaging families in programmes, e.g. Hogarty *et al* (1986) found a refusal rate of 13%. It must be anticipated that a proportion of families will refuse to attend the relatives group, however this is set up. In our view, it is essential to reach out to these families by organising regular family sessions in the home. It is in the families that are most reluctant to engage with professionals that patients are at the highest risk of relapse. The process of engagement requires tact and patience, but we have not found the problems to be insuperable.

We still need to consider the place of an educational component in any intervention programme. In the first trial we applied a Knowledge Interview before and after the education lectures and found that significantly more relatives knew the diagnosis afterwards, and that there was a significant increase in optimism (Berkowitz *et al*, 1984). An analysis of comparable data from the second trial will be presented elsewhere. Tarrier and colleagues

(1988) included in their study a group of relatives who received education only. They found that this had no impact on the patients' relapse rate. This supports our view that education should be an integral part of a more comprehensive programme. Furthermore, education is not confined to the formal sessions in which information is imparted, but continues throughout the period of contact with the therapists. The setting in which education is best given remains an open question. In both our trials we arranged sessions in the home with each family. Patients were excluded, but we left the text of our lectures with the relatives to show the patients if they saw fit. Hogarty *et al* (1986) ran multi-family workshops from which patients were also excluded, although they were involved in later educational sessions. The best method of providing education, and the optimal way of involving patients in this process need further study.

By contrast with the impact on the relapse rate, very little change was observed in the social functioning of the patients in our current trial. Small, statistically non-significant, gains occurred in the areas of independent living, socialisation with friends, and daily occupation. Progress in these areas of functioning depends on the amelioration of the negative symptoms of schizophrenia. It is our clinical impression that this occurs much more slowly than improvement in positive symptoms, so we would not expect much change over nine months. Negative symptoms are difficult to measure reliably, but we can examine changes in blunting of affect, which is rated as part of the PSE. On admission, 13 of the 23 patients in the trial showed some degree of blunting of affect, while at the nine-month follow-up this had fallen to nine, a non-significant reduction. If our interventions benefit negative symptoms in the long run as well as positive symptoms, we would expect to see this reflected in significant improvements in social functioning by the time of the two-year follow-up, which we will report on later.

The clinical significance of our two trials can best be appreciated in relation to other similar studies. There have now been five other trials of family treatments in conjunction with maintenance neuroleptics for schizophrenia (Goldstein *et al*, 1978; Falloon *et al*, 1982, 1985; Köttgen *et al*, 1984; Hogarty *et al*, 1986; Tarrier *et al*, 1988). Of the seven trials, only that of Köttgen and her colleagues produced a negative result, and these workers employed an analytic type of group therapy which is at variance with the social treatments used in the other studies. The outcome of family treatments in the other six studies was remarkably consistent, with relapse rates of 12% or less over a year or so, compared with about 50% for control patients. We would argue that the success of these trials compared with that of Köttgen and her colleagues provides evidence that the therapeutic benefit stems from the particular content of the interventions and the specific approach of the therapists. The question is not whether such treatments should be incorporated in routine clinical practice, but the most practical way this could be achieved. In our two trials, age, sex and marital status had no influence on the relapse rate of schizophrenia. The implication is that the interventions studied are applicable to the whole range of patients seen, from young, unmarried males to elderly, married women.

Finally, we would like to draw attention to one finding from the analysis of the combined data from our two trials. In experimental families in which EE and/or contact was reduced from high to low, the relapse rate was minuscule (5%). This is partially supported by data from the study of Hogarty *et al* (1986), who recorded no relapses in households which changed from high to low EE. The relationship between face-to-face contact and relapse which emerged repeatedly in British studies has not been replicated in American studies, either naturalistic or experimental. This suggests that we may be encountering a genuine cultural difference in social interaction. However, the findings for EE from the British and American experimental studies are consistent and support the view that this factor exerts a modifying influence on the course of schizophrenia.

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# Psychiatric Clinics in General Practice
## Do They Reduce Admissions?

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General-practice-based psychiatric clinics have increased substantially in recent years. We investigated the influence on psychiatric admissions of this style of practice in England over an 18-year period. We utilised data from a previous survey concerned with this type of work (Strathdee & Williams, 1984) and compared them with figures on psychiatric admissions. Parts of the country in which there has been greater development of general-practice-based psychiatric clinics were also those in which there has been a steeper decrease in psychiatric admissions. Further analysis showed this to be due primarily to an effect on admission of non-psychotic patients.

Twenty years ago, a large-scale study demonstrated for the first time that most mental disorder in the community was identified and treated by primary care physicians rather than by psychiatric specialists (Shepherd *et al*, 1966). Since then, several attempts have been made to search for optimum models of collaboration between psychiatrists and general practitioners. Recently, three models of primary care/psychiatrist collaboration have been identified: the 'replacement' model, the 'increased throughput' model and the 'liaison–attachment' model (Williams & Clare, 1986).

The 'replacement' model is exemplified by American community mental health centres, where the psychiatrist replaces the GP as the 'doctor of first contact' for patients with psychiatric problems (Fink & Oken, 1976). The 'increased-throughput' model describes the notion that general practitioners should be encouraged to refer more patients to pre-existing hospital-based facilities: this strategy would require, and would also be a consequence of, greater numbers of hospital-based psychiatric staff (Williams & Strathdee, 1985). These two models have not succeeded in Great Britain (Clare, 1980; Williams & Clare, 1981). Furthermore, they have been considered inappropriate to the context of the primary care structure (Clare, 1980) and contrary to the principles recommended by the World Health Organization (1973).

The 'liaison–attachment' model describes the movement of psychiatrists out of the hospital and into the general practice setting. Several descriptive reports of psychiatrist attachment schemes in general practice have been published (Gibson *et al*, 1966; Brook, 1967; Lyons, 1969; Hunter & McCance, 1983; Tait, 1983; Mitchell, 1983). Furthermore, a recent two-stage survey of all consultant psychiatrists investigated the extent to which the 'liaison–attachment' model was practised in England and Wales (Strathdee & Williams, 1984). The results showed that almost 20% of the psychiatrists spent some time in a general practice setting, and that they mainly adopted a 'shifted out-patient pattern' of collaboration. That is, they undertook both assessment and treatment of patients, either alone or with the general practitioner (Strathdee & Williams, 1986). The general view, both of the psychiatrists and of the GPs, was that the new service could improve the standard of clinical care and prevent hospital admissions (Strathdee, 1987).

Do general-practice-based psychiatric clinics indeed bring about a decrease in admissions to psychiatric beds? While there is a dearth of evaluative studies, there is evidence to suggest that they do. For example, McKechnie *et al* (1981) compared general practices served by a specialist psychiatric team (psychiatrist, psychologist and social worker) with those without such a facility: they found that fewer patients were admitted from the general-practice-based clinics. More recently, Tyrer *et al* (1984) evaluated the impact of five GP psychiatric clinics on admission rates and duration of stay in Nottingham. According to their results, admissions and bed occupancy rates were reduced, but there was an increase in domiciliary visits and referrals to day hospitals.

An important question is whether this association between general-practice-based psychiatric clinics and a reduction in admissions is a general finding, or applies only to particular services. To investigate this, we utilised data collected in Strathdee & Williams' (1984) survey, and compared them with trends in admissions to psychiatric beds in the regions of England over an 18-year period.

## Method

### Data sources

*Extent of 'liaison–attachment' schemes.* Data were extracted from the two-stage survey conducted by the General Practice Research Unit at the Institute of Psychiatry in London (Strathdee & Williams, 1984). Information was collected as to the extent of such schemes, and those conducting them provided information about their activities.

In the present study we analysed, for each Regional Health Authority (RHA), information concerning the number of psychiatrists involved (consultants and junior staff), the time spent in the general practice setting (sessions per month) and the year when the service started.

*Admissions to psychiatric beds.* Data concerning admissions (all ages) to mental illness hospitals and units and teaching hospitals for the years 1964–1981 were extracted from the relevant volumes of *Inpatient Statistics from the Mental Health Inquiry for England* (the 1972 and 1980 editions were not published, so that data for these years are not available). The figures were organised according to Regional Hospital Boards (RHBs) for the years 1964–1973, and according to RHAs for the subsequent years. Data concerning the home population were extracted from the same publications.

### Data analysis

The 1974 reorganisation of the National Health Service resulted in changes in the sizes of the populations contained in the various regions. To overcome this problem, we aggregated contiguous RHBs and RHAs into ten 'superregions', so as to minimise the effect of boundary changes.

Then, we used a method similar to that used by Williams *et al* (1986) to investigate the effects of changes in the organisation of psychiatric care on suicide. Thus, we divided the study years into two periods (1964–1972 and 1973–1981). In the first of these periods, 'liaison–attachment' schemes were few in number, whereas they increased rapidly in number from 1973 onwards (Strathdee & Williams, 1984, Fig. 1). For each 'superregion' and for each period, least-squares regressions were calculated for admission rates against time. This was done for all admissions, for admissions of patients with a diagnosis of psychosis (schizophrenia, paranoia, senile dementia, alcoholic or other drug psychoses, mental handicap) and for all others (i.e. non-psychosis).

Similarly, regression analyses were performed for the numbers of psychiatrists involved in the GP psychiatric clinics and the numbers of sessions (per month per population) against year. Logarithmic transformation was first applied, because preliminary inspection of the data showed that the pattern of increase of 'liaison–attachment' schemes was curvilinear in nature (Fig. 1).

For each 'superregion', the regression coefficient for admissions against time (i.e. the rate of increase or decrease in admissions) in the first period ($b_1$) was subtracted from the corresponding regression coefficient for the second period ($b_2$). The resulting difference ($b_2 - b_1$) represented the *change* in the trend in admission rates between the two periods. The same exercise was performed for the two indices of general-practice-based psychiatry (number of psychiatrists and number of sessions worked per month, per population).

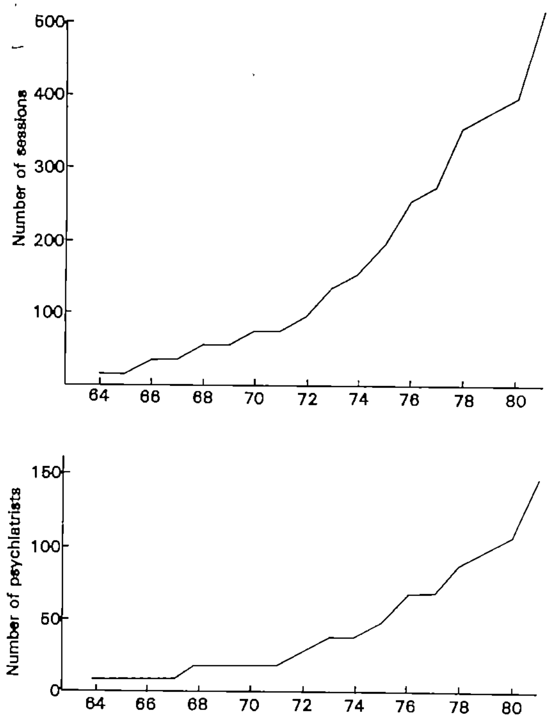

Fig. 1. Number of psychiatrists (consultants and junior staff) and sessions per month worked in GP clinics, 1964–1981.

Then, the change in the trend in admissions ($b_2 - b_1$) was correlated with the change in the trend in general practice psychiatry, across the regions. The resulting correlations were assessed by judging the strength of the associations rather than by tests of statistical significance (these were data from a whole population and from a fixed number of years: there was no sampling and there is no question of generalising beyond the data).

## Results

Figure 1 shows, for the whole of England, the number of psychiatrists working in the general practice setting and the sessions per month that they worked, for the years 1964–1981. Table I shows the same variables for each 'superregion' in the years 1972 and 1981 (the end of each study period).

The expansion of GP clinics is evident. The number of psychiatrists involved and the year in which they started varies between the ten 'superregions': for example in two superregions, no GP clinics were started before 1973, whereas in each of two others, there were eight psychiatrists already working in GP clinics in that year. Despite these

TABLE I

*Number of psychiatrists (consultants and junior staff) and sessions per month worked in GP clinics at the end of each period, for each 'superregion'*

| *Superregions* | *Psychiatrists* | | *Sessions per month* | |
|---|---|---|---|---|
| | *1972* | *1981* | *1972* | *1981* |
| Northern | 0 | 3 | 0 | 8 |
| Yorkshire, Mersey, North Western | 8 | 45 | 19 | 147 |
| Trent | 1 | 14 | 2 | 54 |
| East Anglian | 2 | 6 | 15 | 21 |
| North-West Thames, North-East Thames | 7 | 21 | 15 | 53 |
| South-East Thames, Maudsley Hospital | 0 | 11 | 0 | 35 |
| South-West Thames, Wessex | 8 | 21 | 43 | 97 |
| Oxford | 3 | 6 | 8 | 18 |
| South Western | 1 | 19 | 1 | 55 |
| West Midland | 1 | 8 | 1 | 26 |
| Total | 31 | 154 | 104 | 514 |

differences, the table demonstrates clearly that the trend of increase in psychiatric clinics in general practice was common to all the superregions. In contrast, there was no increase in the average time devoted by each psychiatrist to these activities: this remained constant at just over three sessions per month.

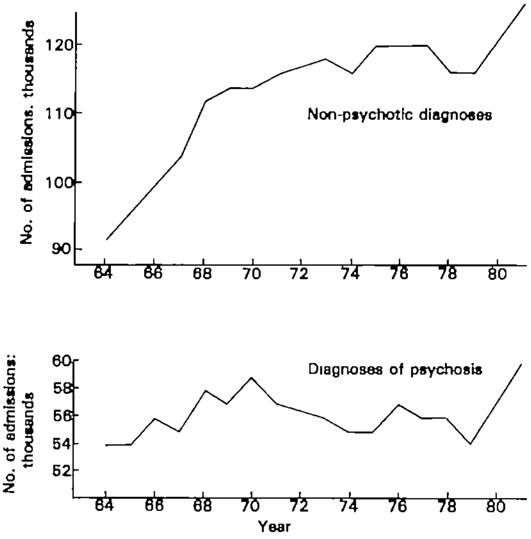

FIG. 2. Admissions to psychiatric beds, England, 1964–1981.

Figure 2 shows admissions to psychiatric beds in England 1964–1981, subdivided by diagnosis. The regional trends in admissions to psychiatric beds, as represented by the linear regression coefficients, are shown in Table II. For all admissions, these trends were positive in nine of the 'superregions' for the first period (1964–1972) and in seven for the second period (1973–1981). The difference between the two trends ($b_2 - b_1$) (our measure of the change in the trend of admissions) was negative for nine superregions, the exception being East Anglia.

Three 'superregions' in the first period and five in the second period had negative trends for admissions of psychotic patients, and the difference between the two trends was negative for seven superregions. For admissions with other diagnoses, Table II shows that the only negative trends were those for two superregions (South-West Thames, Wessex: South Western) in the second period. However, nine of the differences were negative (all except East Anglia).

Table III shows the correlations between the changes in the trends of our two measures of general-practice-based psychiatry and the corresponding changes in trends of admissions. With regard to all admissions, both the correlations were negative and moderately strong. That is, 'superregions' in which there was a greater increase in general-practice-based psychiatry were also those in which

TABLE II

*Trends of admissions in the ten 'superregions' during each period: linear regression coefficients of admissions for all diagnoses, psychotic disorders and other psychiatric diagnosis*

| *Superregions* | *1964–1972* | | | *1973–1981* | | |
|---|---|---|---|---|---|---|
| | *All* | *Psychotic* | *Other* | *All* | *Psychotic* | *Other* |
| Northern | 0.777 | 0.180 | 0.596 | 0.256 | 0.100 | 0.156 |
| Yorkshire, Mersey, North Western | 0.824 | 0.133 | 0.691 | 0.427 | 0.138 | 0.289 |
| Trent | 1.490 | 0.335 | 1.154 | 0.183 | 0.116 | 0.067 |
| East Anglian | −0.282 | −0.437 | 0.155 | 0.477 | −0.965 | 0.301 |
| North-West Thames, North-East Thames | 0.966 | 0.113 | 0.853 | 0.091 | −0.039 | 0.130 |
| South-East Thames, Maudsley Hospital | 1.222 | 0.139 | 1.083 | 0.412 | 0.100 | 0.312 |
| South-West Thames, Wessex | 0.135 | −0.144 | 0.279 | −0.277 | −0.023 | −0.254 |
| Oxford | 0.456 | 0.187 | 0.269 | 0.283 | 0.141 | 0.142 |
| South Western | 0.557 | 0.140 | 0.407 | −0.074 | −0.070 | −0.004 |
| West Midland | 0.170 | −0.221 | 0.391 | −0.100 | −0.105 | 0.005 |

TABLE III

*Correlations between trends of admission rates and numbers of psychiatrists working in GP clinics and sessions per month*

| | *Psychiatrists* | *Sessions per month* |
|---|---|---|
| *All diagnoses* | | |
| $b_2-b_1$ (zero order) | −0.470 | −0.513 |
| $b_2-b_1$ controlled for $b_1$ (first order) | −0.346 | −0.419 |
| *Psychoses* | | |
| $b_2-b_1$ (zero order) | −0.091 | 0.032 |
| $b_2-b_1$ controlled for $b_1$ (first order) | −0.144 | −0.015 |
| *Other diagnoses* | | |
| $b_2-b_1$ (zero order) | −0.496 | −0.542 |
| $b_2-b_1$ controlled for $b_1$ (first order) | −0.315 | −0.382 |

there was a greater decrease in admissions. This relationship accounted for about 25% of the variance in admission trends, and persisted when the trends in admissions during the first period were partialled out (i.e. controlled for, to remove the effect of pre-existing between-region differences in admission trends).

As indicated in the method, admissions were subdivided according to diagnosis. Table III shows that the relationships between general-practice-based psychiatry and admissions to psychiatric beds were exclusively due to an effect on the admission of patients with non-psychotic disorders, since the correlations with psychosis admissions were trivial (they remained trivial when the analysis was repeated so as to exclude admissions with a diagnosis of dementia from the psychosis admissions). This key result – the negative relationship between the growth in general-practice-based psychiatry and admission of patients with non-psychotic disorders – is displayed in a more direct way in Fig. 3. The ten 'superregions' were divided into two groups of five according to the value of $b_2-b_1$ (thus indicating 'slow' and 'rapid' growth of general-practice-based psychiatry), and admissions for non-psychotic disorders are plotted for these two groups separately in Fig. 3. The difference between the trend in admissions for the two groups of superregions is obvious, and it is noteworthy that they began to diverge in the early 1970s, just as general-practice-based psychiatry began to expand.

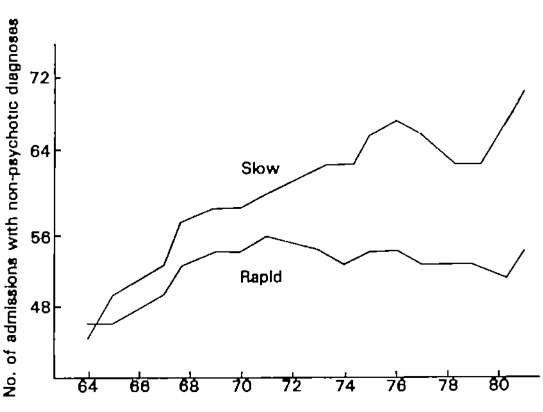

FIG. 3. Admissions to psychiatric beds with non-psychotic diagnoses 1964–1981, for groups of 'superregions' exhibiting rapid and slow growth in general-practice-based psychiatric clinics.

## Discussion

Three points must be borne in mind when considering the results of this study. *Firstly*, the survey by Strathdee & Williams (1984) – from which the data on general-practice-based psychiatry were derived – had, in common with virtually all postal surveys, a less than perfect response rate (88% at the first stage and 71% at the second). However, non-response at the first stage is probably not relevant to the present investigation, since psychiatrists engaged in general-practice-based work are more likely to have responded than those who were not (perceived salience emerged as the most important predictor of response rate in Heberlein & Baumgartner's (1978) and Goyder's (1982) meta-analytic investigations of postal surveys).

To investigate the influence on our findings of non-response at the second stage, we compared the second-stage response rates obtained by Strathdee & Williams across the ten 'superregions'. There were no significant differences ($\chi^2=14.17$, 9 d.f., NS), suggesting that non-response is unlikely to have biassed the findings.

*Secondly*, it is always difficult to obtain a comprehensive picture of a psychiatric service solely from admissions data. Furthermore, these were derived from routine returns made to the Department of Health and Social Security, and the diagnoses in such returns are not always accurate (Forster & Mahadevan, 1981). Although this may mean that the absolute numbers are subject to error, our study is concerned exclusively with trends.

*Thirdly*, the validity of our methods of analysis requires comment. The technique of correlating differences between trends is discussed in detail by Williams *et al* (1986) and will not be considered further here. However, it is necessary to assess the validity of the linearity assumption inherent in our use of regression coefficients. The mean product-moment correlation coefficient for the 90 regression analyses was $|0.70|$, suggesting that our assumption was indeed reasonable.

Within these limitations, the results are clear, in those parts of the country where there has been a greater increase in general-practice-based psychiatry, there has also been a greater decline in admissions of non-psychotic patients. This association was moderately strong and not due simply to pre-existing differences in admission trends among the regions, since it persisted when adjustments were made to allow for their effect. Thus, the results substantiate the opinions of psychiatrists who work in general practice 'liaison–attachment' schemes (referred to earlier), as well as confirming, at the national level, the findings of McKechnie *et al* (1981) and Tyrer *et al* (1984) at the individual service level. These findings have an important implication. If the treatment of psychiatric patients in primary care does indeed reduce admission rates, then this type of clinic deserves to be extended. However, it is difficult to assess the relative contribution of a new development in the context of a service that is constantly changing in response to differing demands and attitudes. In particular, it may be that the development of general-practice-based psychiatry is an indicator of a positive orientation towards community psychiatry, with the consequent formation of a variety of new initiatives. Comprehensive evaluation of such developments is an urgent research priority.

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# Referrals from General Practitioners to Psychiatrists and Paramedical Mental Health Professionals

GREG WILKINSON

The literature on referral of patients by GPs to psychiatrists and mental health specialists is examined. Referrals to psychiatrists account for 3% of all those made by GPs, but the individual rates vary widely. The proportion of patients referred to psychiatrists and paramedical mental health workers in general practice is unknown, but probably substantial.

Much has been written about referral from general practitioners (GPs) to non-psychiatric specialists (Dowie, 1983), but relatively little about referral from GPs to psychiatrists and paramedical professionals concerned with mental health (Kessel, 1963; Wilkinson, 1985). In essence, there are wide variations in the referral rates of individual GPs and the reasons for these are not clear. The aim of this brief review is to synthesise the literature on this complex topic, seeking fresh perspectives.

## Referral from GPs to psychiatrists

Most psychiatric treatment is provided by GPs. Thus, in a year around 14% of adults consult their GPs at least once with symptoms diagnosed as psychiatric in nature. While more than half of these conditions have been present for at least one year, and although it can be assumed that illness of such chronicity has proved unresponsive to simple treatment, only about 5% of the patients concerned will have received specialist psychiatric care during the year (Shepherd *et al*, 1966). The main determinants of psychiatric referral for this minority of patients are as follows.

(a) GPs' characteristics
  (i) high rate of identification of psychiatric disorder
  (ii) older age
  (iii) single-handed practice
(b) Patients' characteristics
  (i) male sex
  (ii) younger age (between 25 and 45)
  (iii) psychotic disorder
  (iv) chronic disorder (over one year's duration)
(c) The psychiatric service
  (i) community-oriented services (for patients with psychotic disorders)
  (ii) urban and accessible services.

Evidently the characteristics of GPs, patients and specialist services (Shepherd *et al*, 1966) interact in an intricate and enigmatic way. It has been suggested that the effect of specialist services is probably the least important of the triad (Goldberg & Huxley, 1980) but, at the same time, the role of psychiatrists as a determinant of referral has been virtually ignored.

The reasons given by GPs for referring patients to psychiatrists are:

(a) Main reasons
  (i) patient failed to respond to GP treatment
  (ii) diagnostic opinion or investigations required
  (iii) patient, relative, hospital doctor, or social worker requested specialist referral
  (iv) specialist to share or take over management of the patient
(b) Less common reasons
  (i) need for a specialist form of treatment
  (ii) behavioural disturbance or serious social difficulties
  (iii) risk of suicide
  (iv) a member of the patient's family is already being treated by a psychiatrist, and it is considered beneficial that the patient should also attend
  (v) the GP wishes to recruit the psychiatrist's support in helping a patient with legal problems or in negotiating with local authority services.

In the light of these, it is intriguing to find that scrutiny of the specialist care provided in out-patient clinics suggests that fewer than half the patients attending need to remain under the direct supervision of consultants, and even fewer require special facilities or treatments available only at hospital sites (Johnson, 1973*a*,*b*). By contrast, the most commonly cited reason for GPs not referring appropriate patients to a psychiatrist remains the stigma of psychiatric care. Delay and dissatisfaction with referral arrangements appear to be uncommon reasons for GPs not referring patients.

### GPs and psychiatric out-patient clinics

Johnson (1973*a*,*b*) found that up to a half of GPs used psychiatric out-patient clinics as a source of primary care or advice, without first treating or investigating their patients, and that psychiatrists tended to regard themselves as largely responsible for the total care of patients rather than merely as consultants. Consequently, there appears to be substantial blurring of the interface between primary and secondary psychiatric care, contributing in large measure to a mismatch between the observed and expected roles and functions of psychiatrists.

At the out-patient clinic there seems to be a high degree of uniformity in the diagnostic categories recorded, treatments prescribed and disposal arrangements. Kaeser & Cooper (1971) found that the most usual management decision at initial specialist consultation was to continue out-patient treatment – the intended disposal for three-quarters of patients attending. Subsequently, however, some two-thirds of out-patients were seen on fewer than four occasions, and this rapid decline in attendance appeared to be due equally to high rates of discharge and of lapse from care.

For those attending more often, continuity of care tended to be unusual, with four-fifths of those attending on four or more occasions seeing different hospital doctors on different occasions. After three months, under a half of patients referred were still attending out-patient clinics, a quarter were receiving psychiatric treatment from their GP, and around a quarter were not receiving any treatment. More importantly, the patients' clinical status at this time did not seem to be closely related to their treatment status, although those who decided to stop treatment tended to make relatively poor progress.

These observations may seem to reflect unfavourably on referral from GPs to psychiatrists. But, when asked, GPs indicate that in over half of cases referral is helpful, and that outcome broadly matches expectation (Robertson, 1979). Little or nothing is thought to have been achieved with another quarter and, in a further third, the result remains uncertain because the patient has not been seen again by the GP. Moreover, the attitudes of patients who attend are also generally favourable to referral: their expectations of treatment tend to be low and in most cases realistic, with a minority attending solely for social help.

### Psychiatrists in primary care

About one in five consultant psychiatrists and psychotherapists in England and Wales (or their junior staff) spend roughly one session a week in general practice (Strathdee & Williams, 1984). There are three principal patterns of practice that psychiatrists use in managing referrals in this setting:

(a) Shifted out-patients' pattern; favoured by the majority of psychiatrists, the format being similar to hospital out-patients'
(b) Consultation pattern; assessment of patients in collaboration with the GP, with treatment administered by the GP
(c) Liaison-attachment team pattern; adopted in longer-standing attachments, with psychiatrists instituting working links and training with other mental health professionals.

Although few psychiatric attachments in general practice have been studied systematically, they are claimed to have important advantages over traditional out-patient clinics. For example, specialist psychiatric clinics in general practice appear to lead to an increase in the number of patients seen, and a decrease in the number of new referrals; patients referred in the traditional way are more likely to have had previous contact with psychiatric services, to be admitted to hospital, and to spend more time as in-patients (McKechnie *et al*, 1981; Tyrer, 1984; Tyrer *et al*, 1984).

## Referral from GPs to paramedical mental health workers in general practice

There is relatively little information about the patterns of referrals from GPs to paramedical providers of mental health care in general practice, and how these relate to clinical outcome for patients. It seems clear, however, that increasing numbers of patients with a wide variety of mainly neurotic, personality, relational, sexual, and habit disorders are being referred in this way.

### Nurses

The role of nurses in the care of patients with mental disorder has recently come under closer investigation, especially with the rapid, largely uncharted development of community psychiatric nursing services (Robertson & Scott, 1985). In 1985, there were just under 3000 community psychiatric nurses (CPNs) in the UK: the projections are for 4500 by 1990, 7500 by 1995, and 12 500 by 2000 (Community Psychiatric

TABLE I
*Controlled evaluations of specialist mental health treatment in general practice*

| *Reference* | *Place, time* | *Type of intervention showing benefit* | *Number of subjects in experimental group* | *Period of follow-up* |
|---|---|---|---|---|
| Cooper *et al* (1975)[1] | Croydon | General practices served by social workers vs GPs that are not | 92 | 1 year |
| Corney (1981)[1] | Croydon | Social worker vs GP | 41 | 6 months |
| McKechnie *et al* (1981) | West Lothian | General practices served by specialists vs GPs that are not | 72 | 2 years |
| Earll & Kincey (1982)[1] | Manchester | Psychologist vs GP | 23 | 32 weeks |
| Ashurst & Ward (1983)[1] | Southampton | Counselling vs GP | 124 | 1 year |
| Robson *et al* (1984)[1] | Surrey | Psychologist vs GP | 214 | 1 year |
| Teasdale *et al* (1984)[1] | Oxford | Psychologist vs GP | 17 | 16 weeks |
| Tyrer *et al* (1984) | Nottingham | General practices served by psychiatric clinics vs GPs that are not | 185 | 2 years |
| Marks (1985)[1] | London | Psychiatric nurse vs GP | 46 | 1 year |
| Martin & Martin (1985) | Bedfordshire | Counselling vs GP | 87 | 2 years |
| Ross & Scott (1985)[1] | Liverpool | Social worker vs GP | 30 | 3 months |

[1] Randomised studies.

Nurses Association, 1985). Increases in numbers of this order suggest that radical changes in nursing practice will follow. It is worth noting that data from the Salford case register show that CPNs are treating patients in primary care, rather than reducing demands made on traditional services (Wooff *et al*, 1986).

### Social workers

Following a period of expansion in social work services during the 1960s and 1970s, within the medical sector they are now being retracted. In part this results from a gradual recognition that there is a dearth of evidence that social counselling/case work is effective in medical settings. Be that as it may, there is some evidence that social workers' more practical skills are useful in the management of chronic neurotic disorders in general practice (Wilkinson, 1982). Shepherd *et al* (1979) concluded that the most likely explanation of the benefits associated with a social work attachment in general practice was that the social worker's actions "supplemented the resources which she mobilised, and facilitated a more positive approach by the GP towards the social orbit of morbidity".

### Clinical psychologists

Around 14% of clinical psychologists work with GPs (Broadhurst, 1977). However, the evidence of the effectiveness of clinical psychology services in general practice remains conflicting (Earll & Kincey, 1982; Freeman & Button, 1984; Robson *et al*, 1984; Blakey, 1986): two controlled clinical trials gave favourable results for the use of cognitive therapy by psychologists in the treatment of depressive disorders (Blackburn *et al*, 1981; Teasdale *et al*, 1984), but two studies of anxiety management produced discrepant findings (Trepka *et al*, 1986; Kiely & McPherson, 1986).

### Counselling

The extent and impact of this widespread activity remains largely unknown (Anderson & Hasler, 1979; Martin & Mitchell, 1983; Murgatroyd, 1983). The most detailed evaluation of counselling in general practice is the Leverhulme Counselling Project (Ashurst & Ward, 1983), which was designed to allow an objective assessment of the acceptability and effectiveness of the counselling approach with a random sample of patients presenting to their GPs with minor neurotic disorder. But the benefits of counselling were not confirmed: there were no overall differences in outcome between counselled and non-counselled patients after one year.

## Meta-analysis of treatment for patients with psychiatric disorder in general practice

A number of controlled evaluations of specialist mental health treatment in general practice are now available, and in order to estimate the overall benefits of such treatment, Balestrieri *et al* (1988) carried out a statistical meta-analysis. Table I shows 11 studies based in British general practice with the general aim of assessing the outcome of treatment by a specialist mental health professional (psychiatrist, nurse, social worker, psychologist, and counsellor) in general practice. In each study, the outcome of specialist treatment was compared quantitatively with the outcome of usual GP treatment.

The main finding of the meta-analysis was that treatment by specialist mental health professionals was superior to usual GP treatment, equivalent to a success rate of specialist treatment just over 10% greater than that of usual GP treatment. While this effect was relatively modest, it was larger than the comparable figure obtained by Prioleau *et al* (1983) in their meta-analysis of outcome after psychotherapy.

Counselling, behaviour therapy and general psychiatry proved to be similar in their overall effect. However, there was a degree of variability among different categories of outcome. The influence of counselling seemed to be greatest on social functioning, whereas behaviour therapy appeared to exert its greatest impact on reducing contacts with the extramural psychiatric services. As can be seen, only two studies dealing with general psychiatric treatment fulfilled the criteria for inclusion in the meta-analysis, both of which were non-randomised and focused only on the use of specialist psychiatric services.

## Conclusion

In a year, 3% of all hospital referrals by an average GP are to specialist psychiatric clinics (Fry, 1983), but the proportion of patients with mental health problems who are referred by GPs to psychiatrists and paramedical mental health workers *in general practice* is unknown – and probably substantial. The over-riding conclusion which emerges is that far more systematic information is required on the nature and outcome of referral processes, so that appropriate local mental health services can be planned and evaluated.

Kessel (1963) asked the question, Who ought to receive psychiatric care in Britain? He restricted his theme to referral between GPs and psychiatrists, arguing that psychiatrists should welcome increasing public demand for their services, and that GPs should be encouraged to refer patients freely to psychiatrists "when they want advice". As we now know, although most acutely ill patients with psychotic disorders see a psychiatrist, the rest, amounting to some 95% of the total, and constituting by far the greater problem from the point of view of public health, are treated by GPs, usually entirely alone, but sometimes in conjunction with various paramedical providers of mental health care.

Inasmuch as mental disorder is a medical problem, GPs are the main providers of care, and the case for establishing general practice as the 'middle ground' for psychiatric treatment is strong (Shepherd & Wilkinson, 1988). GPs become involved early in the detection and treatment of patients in the acute and chronic phases of mental disorders, as well as when relapses occur; they provide a preventive framework, which recognises the patient in the context of family and community, and continuity of mental health care; and they supply comprehensive general health care to a group of patients who tend to consult more often for physical illness (Wilkinson *et al*, 1988). Another important factor is that the treatment of mental disorders in general practice is less stigmatising for the patients concerned.

In keeping with the current transition to the provision of more mental health care in the community, and greater availability and access to paramedical workers, GPs seem to be turning increasingly to nurses, social workers, clinical psychologists and counsellors, rather than to psychiatrists, for additional help for their patients with mental health problems. On the face of it, the evidence supports the effectiveness of the different therapeutic approaches, although none of the studies mentioned above is entirely satisfactory, and many more evaluative studies are required. Against all this are weighed the facts that most of the advantages of non-psychiatrist intervention have been shown with patients with non-psychotic disorders or, in some cases, patients with chronic psychoses who have problems in social adjustment and behaviour rather than major symptoms. Moreover, it has to be acknowledged that several of the studies cited above have involved experimental services rather than established ones, and GPs in many parts of the country have no alternative to referring to a psychiatrist, because no other service is available.

Returning to Kessel's question, both current practice and a developing literature demonstrate the interest and ability of several paramedical professions to provide specialist forms of mental health intervention in primary-care settings. Consequently, attention refocuses on the expertise and role of psychiatrists in reinforcing the effectiveness of the GP and the primary-care team. As Shepherd (1982) stated in a related context, "The delineation of mental illness has charted a much larger territory than was originally envisaged, and it does not follow that it should be populated exclusively by an increased number of psychiatrists. . . . The psychiatrist must now be prepared to define his own function if he is to justify his status".

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# The Chronically Mentally Ill in Community Facilities

## A Study of Quality of Life

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The quality of life of chronically mentally ill patients in acute wards in a district general hospital, a hostel ward and group homes was compared. Within the spectrum of care of these patients, the severity of psychopathology corresponded to their placement. Analysis, including adjustments for the influence of psychopathology, showed differences between the three types of facility. Although differences existed between all types of care, residents in group homes and the hostel ward shared more similarities in quality of life than those in the district general hospital. Problems of caring for the chronically mentally ill on acute wards are highlighted.

The impetus behind the community-care movement came from humanitarian concern over the poor conditions of the chronically mentally ill in the large mental institutions of the 1950s and '60s. British policy on community care has been based upon the district general hospital (DGH) (Department of Health and Social Security (DHSS), 1975, 1985), but has resulted in a number of problems for the chronically severely mentally ill. They tend to remain socially isolated within the community (Cheadle *et al*, 1978) and much responsibility and stress is placed on the caring families (Gibbons *et al*, 1984; Sturt, 1984). In addition, many patients remain dependent on services and cannot be rehabilitated to independent living (Howat & Kontny, 1982). Some new long-stay patients continue to require 24-hour nursing, and hostel wards have been developed to meet this need.

Improving the quality of life (QOL) for the chronically mentally ill is of vital importance, but as QOL is difficult to define and measure a number of different approaches have been developed (Flanagan, 1982; Oliver, unpubl.). Studies in the USA have shown that discharged patients in board-and-care homes are disadvantaged in a number of aspects of life (life domains) such as safety, finances, health, and relationships (Lamb, 1979; Baker & Intagliata, 1982; Lehman *et al*, 1982; Lehman & Linn, 1984; Markson, 1985), although it may be that they are better off in certain life domains when they are discharged from hospital (Okin *et al*, 1983). In Britain, in a study on discharged patients from the hospitals in York, it was found that different facilities fulfilled different needs, with mental hospitals providing best for basic survival needs, health care and activities (Jones *et al*, 1986). In Southampton, patients on hostel wards went into the community more and made more use of its resources after they had been transferred from other wards (Gibbons & Butler, 1987).

South Manchester has a catchment population of approximately 200 000, and is served by a single DGH with no mental-hospital back-up. Since 1983, a ten-place hospital/hostel ward (Douglas House) has provided active and maintenance rehabilitation to new long-stay patients (Goldberg *et al*, 1985; Hyde *et al*, 1987). A charitable body, the Withington Trust, has provided group homes for discharged psychotic patients in addition to the social services group homes. All these group homes have non-resident staff who visit approximately weekly. We felt that after three years of functioning, a relatively stable group of residents had been established at Douglas House, and it was a suitable time to compare the QOL of residents with those patients who remained or had accumulated on the DGH ward, and those who had been more fully returned to the community in group homes.

## Method

### Selection procedure

The sample from the DGH ward consisted of all patients aged 16 to 65 who had been in-patients on acute wards in the DGH in south Manchester for over six months, excluding those with severe organic brain disease (three in all); the remaining 11 patients consented to participation in the study. All ten residents of Douglas House also consented. The sample from the group homes consisted of residents from Withington Trust and social services provisions; in all 13 out of a possible 19 consented to be in the study. All patients involved were resident in south Manchester.

### Assessments

The assessments were done by both authors in the patient's home or in the hospital. Each procedure was performed by one of the authors so as to avoid inter-rater discrepancies. There were three groups of information obtained pertaining to: (a) QOL, (b) mental state and behaviour, and (c) staff attitudes and practices.

### *Quality of life*

The QOL interview of Lehman was used (Lehman *et al*, 1982; Lehman, 1983). It consists of a structured interview lasting one hour in which objective and subjective data are obtained in nine life domains: living situation, family, social relations, leisure activities, work, finances, religion, personal safety and health. Objective data are obtained by asking direct questions about patients' lives, and subjective data are obtained by the patients rating their satisfaction on a seven-point scale, from 'terrible' to 'delighted'. Measures of general well-being are obtained on a similar scale (measure A), and by using several semantic differential responses to the statement 'My life is . . .', such as 'boring–interesting' or 'miserable–enjoyable' (measure B). Personal information is also obtained during this interview.

The patients' attitudes were also assessed by using a modified version of the Patients' Attitudes Schedule (PAS) (Wykes, 1982). This was scored so that dissatisfied responses could be added up to a total score, which indicated unhappiness with the environment or a desire to change.

### *Mental state and behaviour*

Psychiatric diagnoses were made by using the Present State Examination (PSE) and the CATEGO programme (Wing *et al*, 1974). In addition the Krawiecka, Goldberg and Vaughan Scale (KGV) (Krawiecka *et al*, 1977) was used to assess the positive, negative and affective symptoms. The degree of impairment was measured using the Psychological Impairments Rating Scale (PIRS) (Jablensky *et al*, 1980), and the patients' behaviour was assessed by the Social Behaviour Schedule (SBS) (Wykes & Sturt, 1986). From this schedule the mild and severe problems score (BSM) was calculated.

### *Staff attitudes and practices*

The different practices and attitudes of the staff in each facility were assessed using the Management Practices Questionnaire (MPQ) (Garety & Morris, 1984) which scores zero (client-orientated) to two (institution-orientated) on 28 questions.

### Data analysis

All items were scored and univariate comparisons of the three groups were carried out using a one-way analysis of variance for continuous variables, or $\chi^2$ (contingency-table) tests for categorical variables. Continuous variables found to be non-normally distributed were analysed using an appropriate normalising transformation wherever possible; otherwise an appropriate non-parametric procedure was used. Significant differences between pairs of the study group were examined, where indicated, using the Tukey multiple-comparison test. Correlations between the variables were examined using Pearson or Spearman coefficients as appropriate; variables found to be significantly correlated to the QOL scores were included in a multiple-regression analysis to determine their relative importance and degree of influence on QOL. All computations were done using the SPSS (version 8.0) computer package, as implemented at the University of Manchester Regional Computer Centre. Significance was set at the conventional 5% level, although a number of comparisons which just failed to reach this level of significance are reported as indicating trends.

## Results

The sex distribution of the three groups did not differ significantly. Similarly the ages were comparable, having means (s.d.) of 45(14), 42(15) and 40(12) years respectively in the samples from the DGH ward, hostel ward and group homes. There were no significant differences in the length of stay in the facilities or the years since the patients first contacted the psychiatric services. The means (s.d.) of the former (in months) were 35(32), 32(18) and 38(39), and the latter (in years) were 17(8), 20(12) and 12(7) for the DGH ward, hostel ward and group homes respectively. There was no significant difference between the social class of the patients' families.

Of the general well-being scores, measure A showed no significant differences, but measure B showed a significantly greater sense of well-being for the sample in the group homes than for those in the DGH ward or hostel ward ($P<0.05$, Tukey). The means (s.d.) for measure A were 3.09(1.36), 3.60(1.97) and 4.73(1.87), and for measure B were 2.96(1.69), 3.74(1.55) and 4.87(1.62) for the samples from the DGH ward, hostel ward and group homes respectively.

Similarly, for the PAS the general dissatisfaction score was highest for the sample in the DGH ward and lowest in the group homes, respectively 9.36(4.08), 3.80(1.62) and 4.85(5.43) for DGH ward, hostel ward and group homes. The significant difference was between the sample from the DGH ward versus those from the hostel ward and group homes ($P<0.05$, Tukey). This was reflected in the score for the use of social facilities, respectively 2.54(1.43), 5.40(0.52) and 4.77(1.17) for the samples from the DGH ward, hostel ward and group homes. The use of social facilities in the DGH ward was significantly lower than in the hostel ward or group homes ($P<0.05$, Tukey).

The objective QOL indicators for the nine life domains produced a number of significant findings (Table I). Cohesion was lowest in the group homes, although they had a high level of outside social contacts. The hostel ward had the highest levels of leisure activity and the lowest level of victimisation (defined as minor assault and petty theft). The group homes and hostel ward had equal levels of comfort and total social contacts, both of which were higher than for the DGH wards. However, chronic patients on acute DGH wards had the highest level of mental health care, although no better access to it.

The subjective QOL measures (Table II) suggested subjective QOL was better for social relations, finances and health in the group homes, and satisfaction with the living situation was lowest in the DGH wards.

TABLE I
*Means (standard deviations) of objective QOL scores*

| | *DGH ward* | *Hostel ward* | *Group home* |
|---|---|---|---|
| Living situation: | | | |
| cohesion$^{1,3}$ | 0.52(0.17) | 0.53(0.26) | 0.32(0.12) |
| independence | 0.54(0.22) | 0.61(0.20) | 0.59(0.21) |
| influence | 0.40(0.24) | 0.52(0.11) | 0.50(0.22) |
| comfort$^{1,2}$ | 0.48(0.22) | 0.72(0.25) | 0.70(0.17) |
| Frequency of family contacts | 3.09(1.22) | 3.55(0.93) | 3.11(1.24) |
| Frequency of social contacts: | | | |
| total$^{1,2}$ | 2.17(0.83) | 2.98(0.64) | 2.95(0.63) |
| within facility | 3.14(1.50) | 4.25(0.92) | 3.83(0.69) |
| outside facility$^{1,3}$ | 1.33(0.60) | 1.57(0.87) | 2.38(0.98) |
| Leisure activities$^{2,3}$ | 0.42(0.17) | 0.68(0.09) | 0.50(0.13) |
| Religious involvement | 2.50(1.30) | 2.70(0.89) | 3.08(0.95) |
| Legal problems | 0.06(0.13) | 0.03(0.10) | 0 (0) |
| Victimisation$^{2}$ | 0.41(0.30) | 0.05(0.16) | 0.23(0.26) |
| Access to legal aid | 3.21(0.98) | 3.87(1.20) | 3.87(1.04) |
| Health-general: | 1.91(1.22) | 2.20(1.23) | 2.53(1.20) |
| physical care | 0.25(0.22) | 0.37(0.34) | 0.31(0.32) |
| access to physical care | 4.91(0.21) | 4.97(0.10) | 4.92(0.20) |
| mental care$^{1}$ | 0.71(0.10) | 0.52(0.17) | 0.55(0.23) |
| access to mental care | 4.42(0.86) | 4.97(0.10) | 4.79(0.29) |

1. $P<0.05$, DGH v. group home.
2. $P<0.05$, DGH v. hostel ward.
3. $P<0.05$, hostel ward v. group home.

The diagnostic categories as derived from the PSE show the DGH ward to have six patients with schizophrenic psychoses, four with affective psychoses and one with another psychosis; the hostel ward to have four patients with schizophrenic psychoses, four with affective psychoses, two with other psychoses; and the group homes to have four patients with schizophrenic psychoses, five with affective psychoses, three with other psychoses and one with an obsessional neurosis.

TABLE II
*Means (standard deviations) of subjective QOL scores*

| | *DGH ward* | *Hostel ward* | *Group home* |
|---|---|---|---|
| Living situation$^{1}$ | 3.74(1.40) | 4.76(0.81) | 5.31(0.48) |
| Family relations | 4.25(1.67) | 4.60(0.97) | 4.68(1.27) |
| Social relations$^{1}$ | 3.49(1.00) | 3.96(1.19) | 4.61(1.04) |
| Leisure | 3.92(1.15) | 4.43(1.33) | 5.01(0.85) |
| Unemployment | 3.21(1.97) | 3.70(1.60) | 3.74(1.14) |
| School | – | 4.83(0.94) | 4.97(1.78) |
| Religion | 4.16(1.29) | 4.12(1.03) | 5.02(1.12) |
| Finances$^{1,2}$ | 3.09(1.65) | 3.67(1.03) | 4.65(0.96) |
| Safety | 3.58(1.62) | 4.82(1.21) | 4.61(0.90) |
| Health$^{1,2}$ | 3.68(1.42) | 4.35(1.12) | 5.17(1.10) |

1. $P<0.05$, DGH v. group home.
2. $P<0.05$, hostel ward v. group home.

The means (s.d.) of the KGV for positive symptoms were 4.00(2.37), 3.10(2.81) and 1.77(1.42), for negative symptoms were 4.81(2.68), 2.80(2.70) and 1.77(1.59), and for affective symptoms were 1.27(1.74), 1.80(1.47) and 1.77(1.79) in the DGH ward, hostel ward and group homes respectively. Only the negative symptoms showed significant differences, those in the DGH ward being significantly higher than in the hostel ward or group homes ($P<0.05$, Tukey).

For the PIRS (Table III), scores for psychological deficits, including indifference, total items, overall impression and general impression, were significantly less in the group homes compared with those in the DGH ward or hostel ward ($P<0.05$, Tukey). The BSM score from the SBS was calculated and gave means (s.d.) of 7.00(4.07), 4.30(2.71) and 1.54(1.39) for those in the DGH ward, hostel ward and group homes respectively. Patients in group homes were behaviourally less disturbed than the patients on the DGH ward patients ($P<0.005$, Tukey).

On the MPQ, the mean scores (s.d.) for staff attitudes were 0.27(0.11), 0.06(0.04) and 0.28(0.04), and mean scores (s.d.) for staff practices were 0.36(0.08), 0.03(0) and 0.27(0.02) for the staff of the DGH ward, hostel ward and group homes respectively. This suggests that from the MPQ, the hostel ward staff were significantly ($P<0.05$, Tukey) more client-orientated than the staff of the other two facilities.

In order to determine whether QOL scores were affected by psychopathology, variables found to be significantly correlated were included in a multiple-regression analysis, and relevant reanalysis using analysis of covariance was undertaken. Eight QOL variables were significantly correlated to some aspect of psychopathology (Table IV); seven of these had shown differences between facilities and one, independence (an objective QOL measure), had not. After reanalysis, a number of significant findings remained, indicating that general well-being was better and cohesion was worse in the group homes, objective leisure activities

TABLE III
*Means (standard deviations) PIRS scores*

| | *DGH ward* | *Hostel ward* | *Group home* |
|---|---|---|---|
| Psychomotor inhibition | 10.36(4.10) | 7.60(5.83) | 5.53(4.31) |
| Non-assertiveness | 0.54(0.69) | 0.80(0.79) | 0.54(0.52) |
| Parathymia | 0.45(0.82) | 0.60(0.97) | 0.23(0.60) |
| Indifference$^{1,2,3}$ | 2.45(1.86) | 1.40(1.17) | 0.30(0.63) |
| Total items$^{1,2,3}$ | 24.82(8.52) | 15.50(10.12) | 9.61(5.69) |
| Overall impression$^{1,2}$ | 19.64(6.56) | 11.80(7.27) | 8.15(4.31) |
| General impression$^{1,2}$ | 29.54(4.30) | 22.30(6.48) | 18.00(4.95) |

1. $P<0.05$, DGH v. group home.
2. $P<0.05$, DGH v. hostel ward.
3. $P<0.05$, hostel ward v. group home.

TABLE IV
*Regression analysis of QOL scores against KGV, PIRS and BSM*

| | *% Cumulative variation ($R^2$)* | *Probability* | *Adjusted group comparisons*[1] |
|---|---|---|---|
| General well-being: | | | Group home>hostel ward, DGH ward ($P=0.022$) |
| total (KGV) | 36.6 | 0 | |
| affective symptoms (KGV) | 44.4 | 0.045 | |
| Cohesion: | | | Group home<hostel ward, DGH ward ($P=0.020$) |
| negative symptoms (KGV) | 11.6 | 0.049 | |
| Independence (objective): | | | NS |
| PIRS (psychomotor inhibition) | 12.7 | 0.039 | |
| BSM | 22.8 | 0.052 | |
| Social contacts outside facility: | | | NS |
| PIRS (total general impression) | 22.2 | 0.005 | |
| Leisure activities (objective): | | | Hostel ward, group home< DGH ward ($P=0.001$) |
| BSM | 9.6 | 0.075 | |
| Living situation (subjective): | | | Hostel ward<group home, DGH ward ($P=0.006$) |
| positive symptoms (KGV) | 31.4 | 0.001 | |
| Social relations (subjective): | | | NS |
| PIRS (total general impression) | 12.4 | 0.041 | |
| Health (subjective): | | | NS |
| total (KGV) | 18.3 | 0.012 | |

1. Comparison of subject groups following covariate adjustment for KGV, PIRS and BSM.

were now greater in the DGH ward, and scores for subjective living situation were worse in the hostel ward. Of the other four QOL scores reanalysed, social contacts outside the facility, subjective social relations and subjective health lost their significant differences, and objective independence remained non-significant. The significant differences shown by those QOL items not correlated to psychopathology (i.e. comfort, victimisation, finances, mental care and total social contacts) remained significant.

## Discussion

This study investigated the QOL of patients in three different facilities in south Manchester. The results should be interpreted with caution because of the statistically small number of patients in the study. Also the patients were not randomly allocated to each facility, so that the mental states and functioning of the patients have to some extent determined where they are resident. This bias is likely to have been confounded by the high refusal rate from the group homes.

The three facilities are clearly different in function and aim. The hostel ward (Goldberg *et al*, 1985) is a highly structured, behaviourally orientated ward, the DGH wards are mainly aimed at the treatment of acute illness, offering only limited rehabilitation for the chronic patients, and the group homes are relatively unsupervised homes for patients not requiring 24-hour nursing care. The MPQ results show the differences in approach of the hostel ward and DGH ward, in that the former is more client-orientated. However, this questionnaire was primarily devised for institutions and staffed residences, and not unsupervised facilities such as group homes. As a result, the staff of the group home scored lower, as they did not celebrate the patients' birthdays, structure their time, or organise outings. For scoring purposes, certain items of the MPQ were omitted when comparing the three facilities as they had no meaning for the group homes. The staff of the hostel ward scored two out of 56 on the full practices scale. This is a comparable finding with that for a similar hostel ward in London (Garety & Morris, 1984).

The results of the PSE show similar diagnostic categories for each facility, but it is clear from the KGV, PIRS and SBS that the mental states and behaviour of the patients are quite different. Those with most disabilities and impairments were on the DGH wards, while those with least were generally in the group homes. The behavioural problems of those in the hostel ward were the same as a group of long-stay patients at Netherne Hospital as measured by the BSM (Sturt & Wykes, 1987), and those of the patients in group homes were similar to those in the Camberwell Community series (Wykes *et al*, 1982).

The findings from the QOL interview are of importance. There is an overall tendency for QOL to be better in group homes, with higher levels of general well-being, subjective satisfaction with the living situation and total social contacts, better finances, and greater comfort. For chronically mentally ill patients on acute DGH wards, the situation is less impressive, although there are higher levels of cohesion, objective leisure, subjective satisfaction with the living situation, and mental care. Unfortunately this last item may reflect item loadings in the scale favouring admission, and there is no better access to mental health care as such. Also the DGH acute wards seem to have the highest levels of victimisation, and this appears to support a previous finding that lack of safety and comfort are two major deficiencies of hospital care for this kind of patient that seriously detract from their QOL (Lehman *et al*, 1986).

The residents of the hostel ward seem to occupy an intermediate position; their environment is socially cohesive, comfortable, has a high level of total social contacts, and appears to be the safest, yet they are disadvantaged financially as they remain, officially, hospital in-patients.

The results of the modified PAS also tend to support this position, with the highest levels of dissatisfaction found in the DGH wards, and with the use of social facilities highest in the samples from the hostel ward and group homes.

Controlling for the effects of psychopathology did have some effect on the initial QOL scores, most particularly on apparently significant findings in subjective health and social relations, as well as social contacts outside the facility. It can easily be seen how these would reflect severity of illness and resulting social disturbance. Overall, however, the effect, as shown by the variation figures in Table IV, was limited.

The findings suggest that placement within the spectrum of care studied here corresponds to the severity of psychopathology. Within this spectrum both group homes and hostel wards could fulfil important functions. Problems in caring for the chronically mentally ill on acute DGH wards would benefit from closer attention.

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# Severity of Withdrawal in Subjects Exposed to a Combination of Alcohol and Minor Tranquillisers

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Fifty patients suffering from the alcohol dependence syndrome were detoxified over a 10-day period using a reducing regime of chlordiazepoxide. Twenty-four had been consuming minor tranquillisers together with alcohol prior to admission. The severity of the withdrawal syndrome was assessed daily but no differences were found between the 26 who had taken alcohol alone and the 24 who had taken a combination of alcohol and drugs. Four from each group had a transient hallucinosis and none had fits.

The development of the alcohol withdrawal syndrome depends upon the consumption of sufficient amounts of alcohol over a prolonged period of time and the sudden reduction (Mello & Mendelson, 1977) or cessation of drinking in biologically vulnerable subjects. It is characterised by physical symptoms such as tremor, nausea, sweating and occasionally seizures and psychological symptoms such as anxiety, irritability, depression, a strong desire for ethanol and sometimes hallucinations (Edwards & Gross, 1976).

The severity and expression of this syndrome depends upon intrinsic factors such as genetic and constitutional differences within the individual and extrinsic factors such as amount of alcohol and period of time over which alcohol was consumed (Johnson, 1961). Previous experience of withdrawal symptoms may also produce an expectation of further symptoms on abstaining. Other important variables are cultural and social milieu, age, sex and social class.

Similar withdrawal phenomena may occur after cessation or reduction of minor tranquillisers (Ashton, 1984; Stille, 1986), although there may be differences in the rate of onset (Hallstrom & Lader, 1981; Petursson *et al*, 1982). Many people admitted for detoxification from alcohol have also been using minor tranquillisers. These patients often have received such psychotropic medication from their general practitioners prior to admission (Wallace, 1985).

Patients referred by general practitioners tend to have a longer history of continuous drinking and often experience more severe withdrawal syndromes than those referred by other agencies (Kessel *et al*, 1984). Anecdotally we had observed withdrawal seizures as late as day 7 of abstinence in patients who had been consuming benzodiazepines as well as alcohol. In view of these observations and the reports of convulsions secondary to benzodiazepine withdrawal (Howe, 1980), we investigated whether the severity of withdrawal experienced following habitual use of alcohol and benzodiazepines or chlormethiazole differed from that experienced following the use of alcohol alone.

The aim of the study was to test the hypothesis that the withdrawal syndrome would be more severe in those consuming alcohol together with minor tranquillisers than in those consuming alcohol alone.

## Method

Fifty patients referred to the Alcohol Treatment Unit of the University Hospital of South Manchester for detoxification, who were drinking on a continuous basis for 14 or more days right up until the day of admission and who met DSM–III criteria (American Psychiatric Association, 1980) for a diagnosis of alcohol dependence, were included in the study. The intake of alcohol and any concurrent drug was determined by patient interview. If chlormethiazole or benzodiazepines had been consumed on a regular basis over the previous four weeks then such patients were included in the alcohol and drugs group (group D). If only alcohol had been consumed then they were included in the alcohol-only group (group A).

Seven types of tranquillisers were recorded in group D patients (numbers of patients in brackets): diazepam ($n=9$), chlormethiazole ($n=9$), temazepam ($n=5$), nitrazepam ($n=4$), chlordiazepoxide ($n=4$), lorazepam ($n=1$) and triazolam ($n=1$). Nine patients were using a combination of two tranquillisers and two patients a combination of three such drugs. All dosages were converted into diazepam equivalents, with 192 mg of chlormethiazole, 2 mg of lorazepam, 0.5 mg of triazolam, 20 mg of temazepam, 10 mg of nitrazepam and 25 mg of chlordiazepoxide being taken to be equivalent to 10 mg of diazepam (McGrath, 1975; *Drug Newsletter*, 1985). Ten patients were consuming 10–20 mg/day, six were consuming 20–30 mg/day and eight consuming more than 30 mg/day of diazepam (mean 58 mg, s.d. 30.2). The duration of tranquilliser intake was in the range 1–60 months, with a mean duration of 18.25 months.

Routine physical investigations were undertaken and all patients received vitamin supplements. In addition they received chlordiazepoxide 20–40 mg four times a day (according to body weight), reducing over eight days to zero.

TABLE I
*Demographic details for the two groups*

| | *Group A, alcohol only (n=26)* | *Group D, alcohol and drugs (n=24)* |
|---|---|---|
| *Age: years* | | |
| Mean (s.d.) | 42.4 (9.5) | 42.2 (10.6) |
| *Sex* | | |
| Males | 21 | 19 |
| Females | 5 | 5 |
| *Employment status* | | |
| Employed | 10* | 3* |
| Unemployed | 15 | 18 |
| Sick | 1 | 1 |
| Retired | — | 2 |
| Social class | | |
| I & II | 1 | 1 |
| III & IV | 14 | 10 |
| V | 11 | 13 |
| *Marital* | | |
| Married/cohabiting | 10 | 11 |
| Divorced/separated | 13* | 4* |
| Single | 3* | 9* |
| *Ethnic origin* | | |
| English | 17 | 19 |
| Irish | 5 | 3 |
| Scottish | 2 | 2 |
| Asian | 1 | — |
| *Criminal record* | | |
| Offenders | 14 | 16 |
| Non-offenders | 12 | 8 |
| *Years of alcoholism* | | |
| Mean (s.d.) | 9.4 (7.8) | 9.4 (8.9) |
| *Daily alcohol dose:* | | |
| Mean (s.d.) | 380 (150) | 425 (250) |
| *Mode of referral* | | |
| Family doctor | 11 | 15 |
| Self | 5 | 1 |
| Council on Alcoholism | 2 | 1 |
| Casualty Department | 1 | — |
| Other | 7 | 7 |

*Indicates a statistically significant difference, $P<0.05$.

There were no significant differences between groups A and D with regard to this prescription (mean starting dose group A 125.8 mg/day, group D 116.7 mg/day). Any temporary increases in medication were recorded.

Withdrawal symptoms were rated each morning using the Selected Severity Assessment (SSA) of alcohol withdrawal (Gross *et al*, 1973). This contains 11 clinical variables: eating disturbance, tremor, sweating, sleep disturbance, clouding of sensorium, hallucinations, quality of contact, agitation, temperature, pulse and convulsions. All items with the exception of the last are scored and the sums of these individual scores form the total daily SSA score, with a range from 2 to 68. The assessments were made by three raters, who were not always blind to patient group allocation as they had been involved in interviewing the patient on admission.

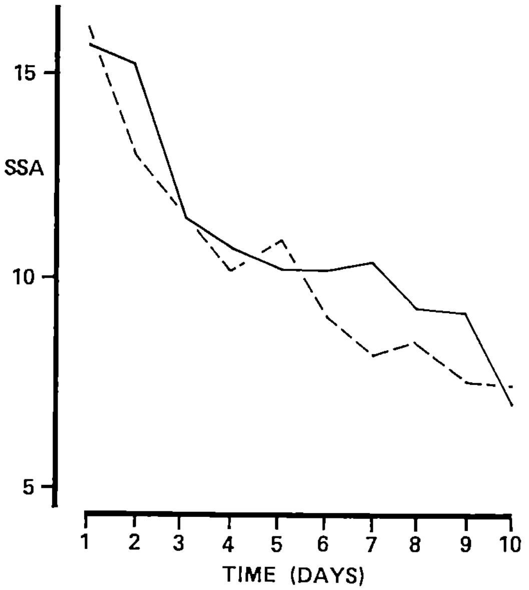

FIG. 1 Mean values of the daily Selected Severity Assessment (SSA) scores for withdrawal symptoms:
———— Group A, alcohol only ($n=26$, daily standard deviation=4.6).
———— Group D, alcohol and drugs ($n=24$, daily standard deviation=5.3).

Ethical approval was granted and informed consent was obtained from each subject.

## Results

Group A comprised 26 subjects (19 male and 7 female; mean age 42.4 years, s.d. 9.5) and group D 24 (18 males and 6 females; mean age 42.2, s.d. 10.6) (see Table I). Group A contained more employed ($\chi^2=9.04$, d.f. 3, $P<0.05$) and more divorced or separated individuals and group D contained more single persons ($\chi^2=7.81$, d.f. 2, $P<0.05$).

Two patients from group A discharged themselves early (on days 7 and 8 respectively), and four from group D (on days 3, 7, 7 and 8). Both groups' SSA scores were moderately raised initially and showed a highly significant reduction over the 10 days (using paired *t*-test comparing day 1 with day 10, $P<0.001$ for both group A and group D). There were no significant differences between the two groups at any stage during the admission (see Fig. 1).

There was a significant correlation between the daily dose of alcohol and initial SSA score ($P<0.05$) for group A. For group D, no relationship with SSA score was demonstrated for dose or duration of intake of drugs or for dose of alcohol.

Eight subjects (seven males and one female), four from each group, had a transient hallucinosis which occurred within the first 24–48 hours of admission; three experienced auditory hallucinations, four visual hallucinations and one experienced hallucinations in both these sensory modalities. The experiences were not particularly distressing to the patients, were intermittent, often occurring at night and usually did not persist for more than 6–12 hours. No seizures were witnessed in any of the patients. A temporary increase in medication was required in three subjects from group A and two from group D.

## Discussion

Our original hypothesis, that the withdrawal syndrome would be more severe in those subjects who consumed alcohol together with benzodiazepines or chlormethiazole, was not supported in this 10-day study. As in Johnson's (1961) study, the homogeneous alcohol-only group (A) did demonstrate a relationship between previous dose of alcohol and severity of withdrawal.

The lack of any relationship between previous dose of tranquilliser and severity of withdrawal may be accounted for by the heterogeneity of drugs taken by group D; this included seven tranquillisers with different pharmacokinetics taken in various amounts and for different durations in combination with different amounts of alcohol. Also only 27–45% of patients who discontinue benzodiazepines after several months' treatment experience withdrawal symptoms (Tyrer *et al*, 1981, 1983).

Alternatively, the SSA may have lacked the sensitivity to detect the withdrawal syndrome of the tranquillisers. Even though 9 of the 11 clinical variables on the SSA are commonly disturbed in withdrawal from chlormethiazole (Stille, 1986) and from benzodiazepine (Ashton, 1984), subtle perceptual disturbances such as depersonalisation, derealisation, excessive sensitivity to light and noise, and perception of objects moving when they are still may have been missed (Tyrer *et al*, 1981).

In addition there is often a delay in onset of benzodiazepine withdrawal, with symptoms peaking 3–7 days after abstinence (Petursson *et al*, 1982) and sometimes persisting for 10–54 days (Hallstrom & Lader, 1981) or a year or more (Ashton, 1984). Due to the effects of cross-tolerance the concurrent prescription of benzodiazepines may have masked or delayed its manifestations.

It is unknown whether or not the subjects in group D developed symptoms of withdrawal after discharge from hospital. During the 10 days studied it was not possible to separate the groups on any clinical measures used and both were markedly improved prior to discharge.

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# The DST and TRH Test in Bulimia Nervosa

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Abnormal neuroendocrine responses have been found in depression and eating disorders. It remains unclear whether these reflect an underlying shared biology or epiphenomena. To evaluate this further, we conducted the 1 mg DST and the TSH response to 500 $\mu$g i.v. TRH in normal-weight bulimics and controls. Bulimics ($n = 18$) demonstrated significantly more DST non-suppression (45%) than controls (18%; $n = 20$). In the bulimic group, non-suppressors were significantly thinner than suppressors, but did not differ from them on any measure of depression. Bulimics ($n = 19$) and controls ($n = 12$) responded similarly without blunting on the TSH response to TRH. These data suggest that DST non-suppression may be related to non-specific variables such as weight. Bulimics do not demonstrate TSH blunting as found in some depressed patients. These tests do not support evidence for a biological link between these disorders.

The term bulimia has been used in at least three circumstances. It is a symptom which can occur in various illnesses (Kirschbaum, 1951); it characterises a subtype of anorexia nervosa (AN) (Russell, 1979; Garfinkel *et al*, 1980; Casper *et al*, 1980); and recently it has been used to describe a separate syndrome also known as bulimia nervosa (Russell, 1979; American Psychiatric Association, 1987). Recent studies suggest that this syndrome of bulimia nervosa (BN) is both a serious and a common disorder. Probably 2–4% of young women meet rigorous criteria for this syndrome, and a further 5% meet criteria for a partial syndrome (Cooper & Fairburn, 1983; Katzman *et al*, 1984; Pyle *et al*, 1986).

It has been suggested that certain biopsychosocial factors place an individual at risk for the development of BN or can contribute to its maintenance (Garfinkel & Garner, 1982; Johnson *et al*, 1984). The study of biological contributors has been stimulated by a purported association between BN and affective illness. BN and affective disorders have similar phenomenology (Russell, 1979; Pyle *et al*, 1981; Hudson *et al*, 1983*c*; Piran *et al*, 1985), similar associated illnesses in the family (Pyle *et al*, 1981; Hudson *et al*, 1983*c*), and a common response to medication (Pope *et al*, 1983; Walsh *et al*, 1984). The association, however, is controversial, with recent reviews questioning the robustness of this relationship (Swift *et al*, 1986). Certain biological parameters may also be abnormal in both conditions (Gwirtsman, 1983). The significance of these biological parameters in affective illness remains somewhat unclear; some investigators (Siever & Uhde, 1984) have explained their presence as reflecting underlying neurotransmitter and/or receptor abnormalities in affectively disturbed patients.

The same central monoaminergic neurotransmitters that are thought to play a role in the pathophysiology of affective disorders also regulate neuroendocrine function. The use of tests that reflect these functions can serve as indices of the activity of such neurotransmitters. One such test that has been extensively studied is the overnight dexamethasone suppression test (DST). Many studies have reported on the rates of non-suppression on the DST in psychiatric populations generally (Insil & Goodwin, 1983), and more specifically in depressed patients with melancholic features (Carroll, 1982). DST non-suppression has also been reported in alcoholism (Swartz & Dunner, 1982), chronic schizophrenia (Dewan *et al*, 1982; Castro *et al*, 1983), dementia (Raskind *et al*, 1982) and AN (Gerner & Gwirtsman, 1981). Several studies have reported the DST in BN (Hudson *et al*, 1982, 1983*b*; Gwirtsman *et al*, 1983, 1984; Mitchell *et al*, 1984; Piran *et al*, 1985; Mussisi & Garfinkel, 1985; Kiriike *et al*, 1986). With the exception of one study (Mussisi & Garfinkel, 1985), all have reported non-suppression rates of 47–67% in BN, similar to those found in depressed populations (Carrol, 1982).

The response of thyroid stimulating hormone (TSH) to thyroid releasing hormone (TRH) has been found to be blunted in approximately 25% of depressed patients (Loosen & Prange, 1982) when blunting is defined as a change from baseline to peak TSH of less than 5 $\mu$U/ml ($\Delta_{\max}$ TSH $< 5$ $\mu$U/ml). It has been suggested that this blunting may reflect downregulation of pituitary thyrotrophs in response to chronic hypersecretion of TRH secondary to neurotransmitter dysregulation (Loosen & Prange, 1982). Blunting has also been reported with increased frequency in alcoholism (Loosen & Prange, 1979), borderline personality disorder (Garbutt *et al*, 1983) and AN (Gerner & Gwirtsman, 1981). Four per cent of the normal population show such blunting (Loosen & Prange, 1980).

The responses of prolactin and growth hormone (GH) to TRH have also been examined in depressed and AN patients. In depressed patients, studies have found impaired prolactin responses (Ehrensing *et al*, 1974; Mendlewicz *et al*, 1980) and a paradoxical rise in GH (Maeda *et al*, 1975; Brown *et al*, 1978; Gold *et al*, 1981) in response to TRH. In AN, TRH stimulation has resulted in normal (Kiriike *et al*, 1987) and reduced prolactin responses (Isaacs *et al*, 1980), which normalised with weight gain, and a paradoxical rise in GH (Maeda *et al*, 1976; Brown *et al*, 1977; Gold *et al*, 1980; Kiriike *et al*, 1987).

There are seven published studies of the TSH response to TRH in BN. One (Gwirtsman *et al*, 1983) found an 80% rate of blunting as defined above. Six others (Mitchell & Bantle, 1983; Gwirtsman *et al*, 1984; Norris *et al*, 1985; Kiriike *et al*, 1987; Kiyohara *et al*, 1987; Levy *et al*, 1988) observed rates of blunting varying from 0 to 30%. Some of these rates are higher than those found in the general population and are similar to those found among depressed patients. Three studies (Gwirtsman *et al*, 1983; Mitchell & Bantle, 1983; Levy *et al*, 1988) reported an abnormal rise in GH following TRH in small numbers of subjects. The first two studies reported elevated basal serum prolactin and a normal increase in prolactin following TRH infusion. The third study found lower baseline prolactin and greater prolactin response to TRH. One study (Kiriike *et al*, 1987) found elevated basal GH levels in 33% and an abnormal rise in GH following TRH in 13% of bulimics with normal prolactin responses.

The results of the above studies have been interpreted to support a close biological relationship between BN and affective disorders. However, an underweight state has been found to be associated with non-suppression on the DST and blunting of the TSH response to TRH in psychologically normal populations (Edelstein *et al*, 1983; Berger *et al*, 1983, 1985; Fichter *et al*, 1986). Both abnormalities also occur in AN (Gerner & Gwirtsman, 1981). Low weight has often been cited as a possible cause of these abnormalities in AN. It has been suggested that weight would not be a factor in such tests in BN because most bulimic subjects weigh more than 80% of average. However, this assumption has not been rigorously and systematically tested within populations of bulimics. Also, these abnormal hormonal responses have not been systematically correlated with various measures of depression to assess whether such responses are more likely to occur in a subpopulation of bulimics with such findings. Identifying such a subgroup could have diagnostic, therapeutic and prognostic utility.

This study examines the DST and the responses of TSH, GH and prolactin to the TRH stimulation test in a group of severely ill bulimic out-patients. The specific objectives of this study were to determine the frequency of abnormal responses in these tests in a bulimic population and to attempt to relate any abnormal hormone responses to (a) parameters of weight and (b) parameters of depression.

## Method

### Subjects

Subjects for the DST study were 18 normal-weight female out-patients with BN who were seen in consultation by the primary author (AK). Subjects for the TRH stimulation test were 19 female bulimics, of whom 15 also participated in the DST study. All subjects gave informed consent. All met DSM–III–R criteria for bulimia nervosa. All subjects were free of medication except for laxatives for at least one month prior to testing. The bulimic subjects were a seriously ill group: 70% binged and vomited on a daily basis. About half the group also misused laxatives and a smaller proportion misused diuretics and diet pills.

Controls for the DST study were a comparison group of 20 volunteers of similar age and sex, and for the TRH test 12 volunteers of similar age and sex, obtained by local advertisement. All gave informed consent. All controls were healthy and medication-free and had no past personal or family history of psychiatric illness.

All subjects and controls were interviewed, weighed, and physically examined, and a personal and family history and mental status were obtained. Sixteen of the bulimics in each study participated in a structured clinical interview, the Diagnostic Interview Schedule (DIS) (Robins *et al*, 1981). All subjects completed the Beck Depression Inventory (BDI) (Beck *et al*, 1961) and the Hopkin's Symptom Checklist (HSCL) (Derogatis *et al*, 1974) at the time of testing.

### Procedure

#### *DST study*

Subjects in the DST study were given 1 mg dexamethasone (two pills of ICN dexamethasone 0.5 mg each) to take at 23:00 on day 1, and a serum cortisol level was drawn on day 2 at 16:00 (Carroll *et al*, 1981; Carroll, 1982). All subjects were cautioned against vomiting following ingestion of the pills until serum levels were obtained. They were told not to appear for venipuncture if they had vomited. Serum cortisol levels were determined using a modified radioimmunoassay method (Wong *et al*, 1979) standardised in our own hospital laboratory; a 16:00 value of above 140 nmol/l (equivalent to 5 μg/dl) represents non-suppression. In our laboratory, at serum cortisol levels of less than 10 μg/dl, the standard error is approximately 5%.

### *TRH stimulation test*

All subjects for the TRH stimulation test were out-patients tested in the Clinical Investigation Unit of the Toronto General Hospital following an overnight fast. There was at least a two-week interval between the TRH test and the DST for those subjects who participated in both studies. An attempt was made to include subjects only in the early follicular phase of the menstrual cycle, but in bulimic subjects who were oligo or amenorrheic this was not always possible. At 08:00 an intravenous line was inserted and a normal saline drip was begun to keep the vein open. Subjects then rested quietly for one hour. At 09:00, 500 μg TRH was given intravenously as a bolus injection. Blood samples were taken just before injection and at 15, 30, 45 and 60 minutes after injection. Samples were immediately centrifuged and the serum was frozen at −20°C.

TSH, GH, and prolactin were assayed using material supplied by the National Pituitary Agency of the US Public Health Service and following directions supplied with the assay. For TSH, the intra-assay and inter-assay coefficients of variation were 4.3% and 8.0% respectively, and the limit of sensitivity was 0.6 μU/ml. For GH, the intra-assay and inter-assay coefficients were 5.0% and 13.0%, and the limit of sensitivity was 0.1 ng/ml. For prolactin, the intra-assay and inter-assay coefficients of variation were 5.2% and 11.5%, and the limit of sensitivity was 11.0 ng/ml.

### Statistical analysis

Frequency rates of non-suppression on the DST were compared between bulimics and controls by Fisher's Exact Probability Test. Analyses of weight comparisons between suppressors and non-suppressors were conducted by two-tailed *t* test, with the level of significance set at $P<0.05$. Data comparing the hormonal responses to TRH were analysed by a two-way repeated measures analysis of variance, with group and time as factors, followed by a one-way analysis as appropriate.

## Results

### Weight-related, diagnostic and family history data

Table I shows demographic and weight-related variables for the two groups. Maximum and minimum weight are based on patient self-report of their weight history post menarche. Percentage average weight is based on average weight for sex, age and height for Canadian women (Department of National Health and Welfare, 1954). Controls and patients in the DST study were of comparable weight. However, in the TRH study the controls weighed significantly less in terms of their percentage of average weight ($P<0.05$), but not their absolute weight at the time of testing. The bulimics were heavier at their maximum weight ($P<0.01$).

TABLE I
*Demographic and weight-related features*

| | *Subjects* | | *Controls* | | *Significance level* |
|---|---|---|---|---|---|
| | *Mean* | *s.d.* | *Mean* | *s.d.* | |
| *DST sample*[1] | | | | | |
| Age: years | 24.8 | 1.4 | 25.8 | 3.6 | NS |
| Height: cm | 160.7 | 0.5 | 167.1 | 0.5 | NS |
| Current weight: kg | 57.7 | 7.1 | 56.2 | 6.5 | NS |
| Current weight: % average weight | 95.9 | 2.6 | 95.5 | 2.4 | NS |
| *TRH sample*[2] | | | | | |
| Age: | 26.1 | 5.4 | 29.9 | 6.3 | NS |
| Height: cm | 166.8 | 5.0 | 168.1 | 5.8 | NS |
| Current weight: kg | 59.9 | 7.2 | 56.3 | 6.3 | NS |
| Current weight: % average weight | 99.7 | 10.5 | 90.7 | 6.3 | $P<0.05$ |
| Maximum % average weight | 121.8 | 21.6 | 96.8 | 8.5 | $P<0.001$ |
| Minimum % average weight | 84.1 | 10.2 | 84.6 | 5.7 | NS |

1. 18 subjects, 20 controls.
2. 19 subjects, 12 controls.

Bulimics in both the DST and TRH studies were similar in terms of DSM-III diagnoses, derived from the DIS. Diagnoses of affective disorder, anxiety disorder and psychosexual disorder were made in 62.5% of the DST subjects and 68.8% of the TRH subjects. Criteria for bipolar illness were met by 19% of both samples. Family history data reveal similar high rates of alcoholism (DST subjects 50%; TRH subjects 52.6%), depression (DST subjects 38.9%; TRH subjects 47.4%) and obesity (DST subjects 33.3%; TRH subjects 36.8%).

### Dexamethasone suppression test

Non-suppression on the DST was shown by 45% of bulimics but only 10% of controls ($P=0.04$). When bulimic

TABLE II
*Bulimic suppressors* v. *non-suppressors on weight measures*

| | *Suppressors (n=10)* | | *Non-suppressors (n=8)* | | *Significance level* |
|---|---|---|---|---|---|
| | *Mean* | *s.d.* | *Mean* | *s.d.* | |
| Current weight: kg | 60.5 | 2.1 | 54.0 | 2.1 | $P<0.05$ |
| % average weight | 101.0 | 3.3 | 89.5 | 3.2 | $P<0.05$ |
| % maximum weight | 83.2 | 4.7 | 80.2 | 5.1 | NS |
| Maximum % average weight | 124.6 | 7.7 | 114.7 | 8.3 | NS |
| Minimum % average weight | 83.2 | 4.0 | 77.5 | 3.8 | NS |

TABLE III
*Bulimic suppressors* v. *non-suppressors on depression measures*

| | *Suppressors* | *Non-suppressors* | *Significance level* |
|---|---|---|---|
| *Family history* | *(n = 10)* | *(n = 8)* | |
| Depression | 5 (50.0%) | 2 (25.0%) | NS |
| Bipolar affective disorder | — | 1 (12.5%) | NS |
| *DSM-III DIS lifetime diagnosis* | (n = 9) | (n = 7) | |
| Affective disorders | 5 (55.6%) | 5 (71.4%) | NS |
| Major depressive | 2 (22.2%) | 3 (42.9%) | NS |
| Bipolar affective | 2 (22.2%) | 1 (14.3%) | NS |
| Dysthymia | 3 (33.3%) | 3 (42.9%) | NS |
| *Current level of depression* | | | |
| BDI: mean score ±s.d. | 18.8±2.9 | 21.2±2.2 | NS |
| HSCL-58, depression subscale: mean score ±s.d. | 119.±9.1 | 126.6±6.4 | NS |

non-suppressors were compared with suppressors on various measures of weight and depression, the non-suppressors were found to weigh significantly less at the time of testing ($P < 0.05$) (Table II). There were no differences in other weight-related parameters. No measures of depression distinguished suppressors from non-suppressors (Table III).

## TSH responses to TRH

Figure 1 shows the mean TSH response to TRH in both control and bulimic subjects. Results of the analysis of variance did not show a significant group by time interaction. Both groups displayed a significant response to TRH ($P < 0.01$), but there were no differences between the groups at baseline or over time. Similarly, the two groups did not differ in their peak responses or in their time to a peak response. Moreover, no bulimic or control subject demonstrated a blunted response based on previously defined criteria. For those subjects who also underwent the DST, non-suppression on the DST did not correlate with a less robust TSH response to TRH. In addition, there was no significant difference on the TSH response to TRH between the groups of patients with and without a DIS diagnosis of depression. Current weight did not correlate with TSH response to TRH.

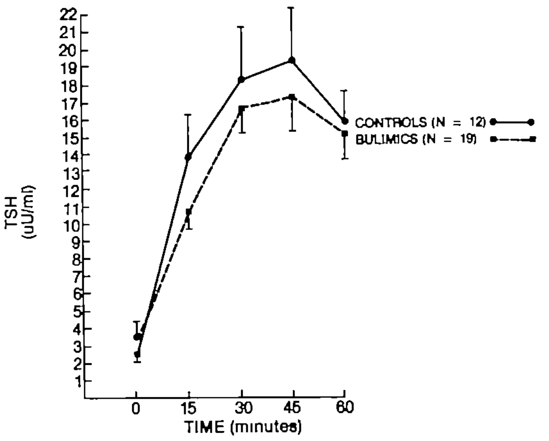

FIG. 1. Serum TSH response to i.v. TRH: mean and s.e.m.; significant time effects only ($P < 0.01$).

## GH and prolactin response to TRH

Figure 2 shows the mean GH response to TRH in both control and bulimic subjects. There was not a significant

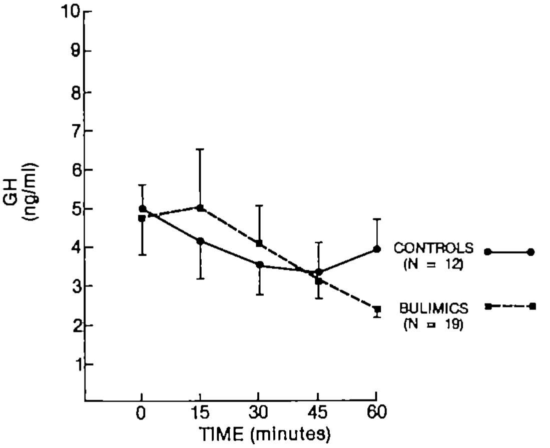

FIG. 2. Serum growth hormone response to i.v. TRH: mean and s.e.m.; significant time effects only ($P < 0.05$).

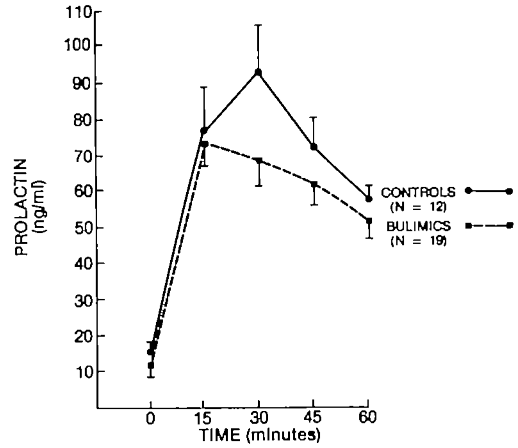

FIG. 3. Serum prolactin response to i.v. TRH: mean and s.e.m.; significant time effects only ($P < 0.01$).

group by time effect on the analysis of variance, but both groups showed a significant GH response ($P < 0.05$); they did not differ at baseline or over time. One bulimic, and no controls, displayed a paradoxical rise in GH. Neither weight nor presence of a DIS diagnosis of depression correlated with GH response to TRH.

Figure 3 shows the prolactin response to TRH. There was a robust prolactin response for both groups ($P < 0.01$), but no differences between the groups in their responses.

## Discussion

The results of this study confirm earlier reports of the high frequency of DST non-suppression in BN. The 45% rate of non-suppression is similar to the findings from other studies (Gwirtsman *et al*, 1983; Hudson *et al*, 1983*b*; Mitchell *et al*, 1984; Piran *et al*, 1985). Non-suppression did not identify a subgroup of bulimics more likely to have a closer link with affective illness. Suppressors and non-suppressors were equally likely to be depressed on self-report measures and on a structured interview; non-suppressors did not display an increased personal or family history of depression. This corresponds with the findings of several earlier reports (Hudson *et al*, 1982; Gwirtsman *et al*, 1984), but contradictory data, linking non-suppression with measures of affective disorder, have also been reported (Mitchell *et al*, 1984; Piran *et al*, 1985).

Non-suppressors in the present study were significantly underweight compared with suppressors. This suggests that the DST may be neither a state nor trait marker for depressive illness, but rather a reflection of non-specific factors such as weight. Some of the previous studies of the DST have examined the relationship between cortisol suppression and indices of weight. One study (Piran *et al*, 1985) found that DST non-suppression was related to how far anorexic and bulimic patients were from their maximum weights, but not to their absolute weight levels at the time of testing. Those patients who were premorbidly heavier were more likely to be non-suppressors.. Gwirtsman *et al* (1983) found a significant correlation between body weight and cortisol levels; thinner bulimics had higher cortisol levels and were more likely to be non-suppressors. Berger *et al* (1985) have found weight loss to be a significant variable, affecting DST results in a large number of psychiatric in-patients and in 24 semi-starved healthy volunteers.

The level of caloric intake at the time of testing may also be important in influencing the DST results. A slight weight gain in starved subjects will cause the DST to revert to normal, even if weight is well below 80% of ideal (Doerr *et al*, 1980). Fichter *et al* (1986) studied healthy normal-weight subjects during a starvation experiment and found that a few days of starvation with only a 3% weight loss provoked DST non-suppression; a few days of normal caloric intake resulted in the DST results reverting to normal. Thus the results of the present study augment others in demonstrating that weight and nutrition appear to play a role in non-suppression.

Other factors must be considered as potential contributors to cortisol non-suppression. Out-patient bulimics who are actively purging may regurgitate their dexamethasone pills even if cautioned against that (Walsh *et al*, 1987), or they may be impulsively non-compliant because of their character pathology. Plasma levels of dexamethasone were not obtained in this study, nor have they been systematically reported in others. This is of some importance because of the extreme inter-individual and intra-individual variability in morning plasma dexamethasone levels observed after people ingest 1 mg of dexamethasone (Meikle, 1982; Berger *et al*, 1985). In addition, the inclusion of a positive control group (i.e. a sample of depressed patients) would have helped to remove confounding variables related to laboratory methods.

In addition to what appears to be a normal physiological variability in healthy subjects, bulimics who do ingest the pills without regurgitation may be particularly prone to having inappropriately low dexamethasone levels. For example, gastrointestinal physiology can be disturbed in a variety of ways in starving subjects and patients with eating disorders (Dubois *et al*, 1979; Holt *et al*, 1981). This altered physiology could affect absorption of dexamethasone and the results of the DST. Further studies on dexamethasone pharmacokinetics and pharmacodynamics are needed, and dexamethasone plasma levels should be measured in future studies in bulimic patients.

Hormonal responses on the TRH stimulation test in this study were normal, and were not correlated with any measures of weight or depression. These findings are not in agreement with earlier reports of blunted TSH responses to TRH (Gwirtsman *et al*, 1983; Mitchell & Bantle, 1983; Norris *et al*, 1985). The control group, however, weighed significantly less than the bulimics in terms of their percentage of average weight. This may have blunted the control group's responses and could have blurred differences between the groups. This is unlikely, however, since no subjects had a significantly blunted response based on $\Delta_{max}$ TSH $< 5\ \mu$U/ml. The GH and prolactin responses did not differ between patients and controls, and bulimics did not demonstrate abnormalities previously reported in depressed (Ehrensing *et al*, 1974; Mendlewicz *et al*, 1980) or bulimic subjects (Gwirtsman *et al*, 1983; Mitchell & Bantle, 1983).

Reasons for the discrepancy between the results of this study and others that have examined TSH responses in bulimics are not clear. Previous studies have not controlled for the immediate nutritional status of the patients being tested. Brief periods of caloric restriction commonly seen in actively bulimic patients can alter the TSH response to TRH (Vinik *et al*, 1975). Also, differences in dosage of TRH exist across studies. In one earlier study (Norris *et al*, 1985) which found blunting in 30% of bulimics, the dose of TRH was 200 μg, whereas a dose of 400 μg is required for maximum stimulation (Andersen *et al*, 1971).

## Conclusion

Bulimics show rates of non-suppression on the DST similar to those found in patients with major depression. These findings could be interpreted as evidence of biological similarity between bulimia and affective disorder. More likely the non-suppression on the DST in this study results from hyperactivity of the pituitary adrenal axis, that seems weight-related despite the fact that all subjects were above 85% of ideal body weight. It remains to be clarified whether this weight factor is related to a recent change in weight, or to an absolute weight that is significantly below a premorbidly naturally heavy weight. Hormonal responses to TRH were normal in bulimics compared with controls and with previously established criteria. It is therefore unwarranted to draw any conclusions linking eating and affective disorders based on these provocative neuroendocrine tests.

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***Point of View***

# Freud's Family

PETER REDER

Sigmund Freud's family background holds extraordinary fascination, not just because he is an historic figure but because his very ideas centred around the influence of formative family relationships. In addition, Freud used his own experiences as one means of research, from which he concluded that some personal details only may be available in disguised form. This has proved an irresistible challenge to those interested in the evolution of Freud's theories.

Historians have sought information from archives (e.g. Masson, 1985), from autobiographical material, including Freud's accounts of his dreams (e.g. Freud, 1900, 1925; Schur, 1972; Balmary, 1982; Anzieu, 1986; Krüll, 1987), from personal recollections (e.g. Bernays Heller, 1956; M. Freud, 1957), from biographies (e.g. Jones, 1964; Roazen, 1975; Clark, 1980; Peters, 1985) and from letters (e.g. Bonaparte *et al*, 1954). However, they found that many dates and events were not accurately recorded* or remain unavailable, and the researchers were left to piece together the puzzle as best they could. They tried to breathe extra life into the known data by suggesting connections between pieces of evidence, proposing hypotheses to explain discrepancies or motives, and offering reinterpretations of Freud's reported self-analysis. I am indebted to these authors, whose work I have drawn upon.

My primary purpose is to bring together into a succinct form the many previous chronicles (see also McGoldrick & Gerson, 1985) and attempt to trace through the patterns of inter-generational and inter-personal relationships. This is not intended to be an account of Freud's academic life, but inevitably our curiosity is aroused about personal influences upon his intellectual and other achievements. While it is very tempting to speculate on the nature of any links, we must remain aware that this is only conjecture.

## The history

The year is 1815. Bismarck is born at Schönhausen in Brandenburg, and the battle of Waterloo is fought outside Brussels. Our story will begin nearly 1000 miles

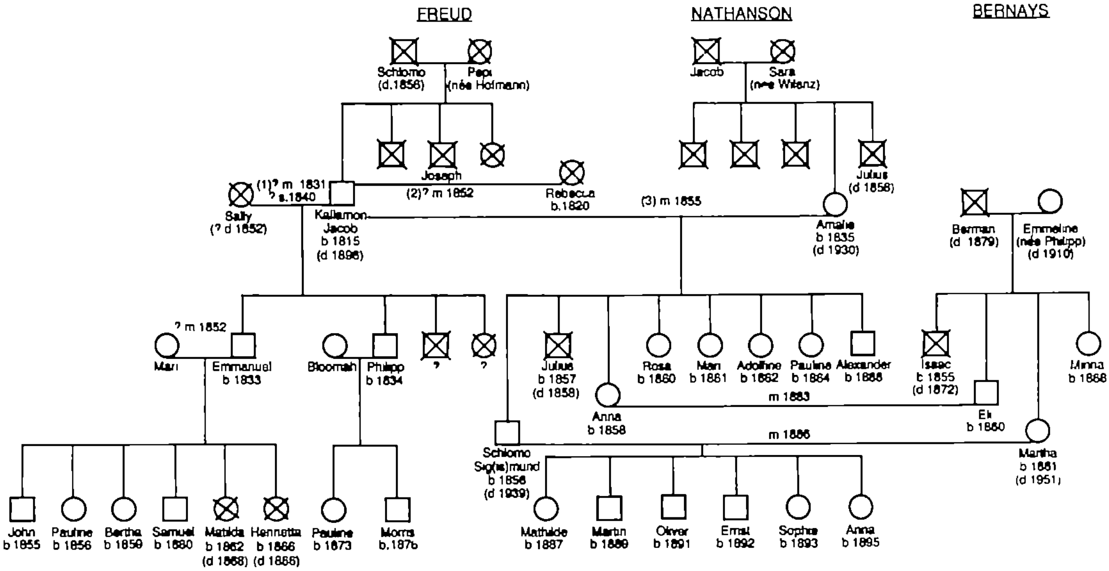

FIG. 1 The Freud family, as it was in 1895. Not all historians agree on dates.*

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*Dates given in this paper are after Krüll (1987).

further east, in the town of Tysmenitz, Galicia, which was then part of the Austrian empire. Until 1772 it had been within the borders of Poland, and today it lies in the USSR.

In 1815 the Jews of Tysmenitz welcomed the birth of Kallamon Jacob, who was to be the first of four children to Schlomo and Pepi Freud (see Fig. 1). The family was a pious one and Schlomo worked as a cloth merchant.

Jacob learned his father's trade, and, as was the custom, married young – before his seventeenth birthday – in 1831. His bride was Sally (née Kanner), and she quickly bore him two sons, Emmanuel and Philipp. It is likely that two further children followed, only to die in early childhood.

Traditionally, Jewish families maintained a close bond with the mother's side, and during his early twenties Jacob partnered his maternal grandfather, Siskind Hofmann, travelling to Freiberg in north-east Moravia (now part of Czechoslovakia) as a wool and textile trader. The journey was over 300 miles and Jacob therefore spent many months at a time away from his wife and sons. It took him into a world of different customs and ways of life, and in 1848, when new laws lifted travel and domicile restrictions on Jews, Jacob chose to reside permanently in Freiberg. It would appear that he had not only broken away from his family, but also its cultural traditions.

Mystery shrouds the next few years. Nothing is known about Sally's fate, but there is good evidence that by 1852 Jacob was remarried, to Rebecca, who had come with Emmanuel and Philipp to join him in Freiberg: he was aged 37 and she 32. Surprisingly, early biographies and autobiographies contain no reference to Rebecca, and we are left to speculate that her existence was a long-standing family secret. There have been many attempts to explain the registration of a Rebecca as Jacob's wife in 1852, if indeed they were not married. One possible hypothesis is that Rebecca was the wife of Jacob's brother Joseph, and was travelling to Freiberg with Emmanuel and Philipp on some clandestine business; for, seven years later, Joseph, Emmanuel, and Philipp were to be implicated in a counterfeiting conspiracy, which Jacob surely would have wanted to keep secret from the rest of his family.

We know from our own therapeutic work how secrets can stir the imagination of other family members, and many biographers note the later conflict between openness and guarding of personal information by both Jacob's son Sigmund and granddaughter Anna.

Jacob's son Emmanuel probably married Mari in 1852, and it cannot be common that a father and son marry within a few months of each other. Could this be an example of competition between the two men? At least we can begin to see the potential for inter-generational confusion in this family.

By late 1852, Jacob, Emmanuel, Mari, Philipp, and Rebecca were living in Freiberg, but Rebecca's departure from the story is as mysterious as her arrival. She may have died, the couple may have divorced, or the marriage may have been annulled. In an intriguing analysis, Balmary (1982) wonders whether Rebecca committed suicide when Jacob had an affair with another woman, making her pregnant, for Jacob married for a third time in July 1855, to Amalie (née Nathanson) from Vienna. There was certainly something unusual about this marriage, as Jacob was then aged 40 and his bride aged only 20, and it was inconsistent with the traditions of Jacob's earlier life for a man to marry a woman so much younger than himself. We should also note that Jacob's new wife was virtually the same age as his unmarried younger son, Philipp.

John was born to Emmanuel and Mari one month after Jacob and Amalie's wedding; and so, by 1856, Jacob was living with his third wife in Freiberg, his younger son was living in the house opposite, and his elder son was living with his wife and son a few streets away.

The following few years were to be turbulent for this extended family. In February 1856, and just seven months after Jacob and Amalie's marriage, Jacob's father, Schlomo, died in Tysmenitz. This must have been a major life crisis for Jacob; he had broken away from his father's religious and cultural traditions, had married twice in a 'foreign' town, had maintained the secret of his second marriage, and was now probably unable to maintain the old custom of saying prayers at his father's graveside. Apart from the expectable period of mourning, we can only imagine how Jacob reacted to this crisis.

Amalie was heavily pregnant when Jacob's father died; three months later, on 6 May 1856, their son was born. He was given the name Schlomo after his recently deceased grandfather (as was Jewish custom), and a German name Sigismund (as was the law).

Schlomo Sigismund was held in very high regard by his parents: he was the first-born son to Jewish parents, and named after a grandfather concerning whom his father probably felt a mixture of admiration and guilt. Throughout his life, Sigismund's mother – said to be self-centred, authoritarian, and somewhat 'masculine' in character – showed a much stronger preference for him than for her daughters, and it must be significant that Sigismund was the only one of Jacob's eight children whose name Jacob entered into the family Bible, and that he himself makes no mention of his siblings in his autobiography (Freud, 1925).

In November 1856, Emmanuel and Mari's second child, Pauline, was born. Little Sigismund now had playmates nine months older and six months younger than he, who were, in fact, his (half-) nephew and (half-) niece. Sigismund and John were especially close.

But a double tragedy soon followed. A brother had been born when Sigismund was 17 months old and had been named Julius, presumably after his mother's youngest brother: but, just five months later, uncle Julius died of pulmonary tuberculosis. Then, at the age of six months, baby Julius died of gastro-enteritis. By the time Sigismund was 17 months old, then, his parents had lost in quick succession Jacob's father, Amalie's favourite younger brother, and now their second son. His parents' mourning and melancholia must have been experienced by Sigismund during his formative years, and Julius' death might well have exaggerated the bond between Sigismund and his mother and father. Sigismund later claimed he could recall his jealousy when baby Julius replaced him for their mother's attention, and how distraught he felt when Julius died.

Family conflict pursued these tragedies. Young Sigismund had a nursemaid while his mother was pregnant with Anna, and some authors (e.g. Krüll, 1987) believe that she sexually abused him by masturbation. We may assume that this was at a time when Amalie and Jacob were emotionally unavailable to Sigismund. In 1859, when Sigismund was aged three, the family split up and went its separate ways, in a manner that caused him considerable distress. Various explanations have been offered for this event. Some suggest that Jacob's business was failing, and others that anti-Semitism resurfaced locally or that Philipp was about to be drafted into the army. Krüll (1987) re-assesses Freud's dream material to propose that he may have witnessed his mother committing adultery with Philipp.

What might have been the effects on young Sigismund of the secrecy surrounding his father's earlier life, of finding his parents emotionally unavailable to him during his early years, of (possibly) experiencing sexual abuse from his nursemaid, of (perhaps) witnessing adultery between his mother and half-brother (whom he regarded as his uncle), of the traumatic break-up of his close extended family, and of the loss of his play companions (from a younger generation)?

Jacob brought his wife and two young children to Leipzig and then to Vienna, where Amalie's family lived, while Emmanuel and his wife and three children, together with Philipp, emigrated to Manchester, England. Emmanuel became a respected member of the community, but Philipp's life seems to have been somewhat less successful. However, while his sons were settling in their new home, Jacob's business and personal life deteriorated in Vienna. He turned into a poor, unhappy and withdrawn man, a disappointment to his family and probably to himself, since he was forced to rely on Amalie's family for financial support. Amalie herself became impatient, impulsive, and demanding, and we might speculate that Sigismund, as the elder child revered by both parents, was for a time triangulated in their complementary relationship (as described by Minuchin, 1974).

During this period of decline, the family had many changes of address, while four more daughters were born. The last child of the household, Alexander, was born in 1866, and during Amalie's pregnancy with him, her father died. Sigismund was to be attached in a parental way to Alexander, and (apart from brotherly closeness) one wonders whether Sigismund was especially sensitive to their father's and mother's unhappiness during Alexander's early years and tried to compensate. Sigismund also developed a positive relationship with Rosa and Adolfine, but Anna and he sparked off anger and competition in each other, possibly influenced by Jacob's extra closeness to Anna.

At the age of nine, Sigismund passed his entrance exam to the Sperl Gymnasium, where he excelled. In his mid-teens he first visited the town of his birth, and also modified his name to Sigmund. He followed his father's wishes for him to be a dedicated scholar, and when he left the Gymnasium with distinction in 1873, he first contemplated a career in law, but then chose to study medicine at Vienna University, graduating in 1881.

When he was 19, his father and half-brother Emmanuel had planned that Sigmund should marry Emmanuel's daughter Pauline. But in 1882, aged 26, Sigmund became engaged to Martha Bernays. She was the third of four children in a devoutly Jewish family: her eldest brother had died in 1872, at the age of 17, and then her father in 1879, since when the remaining brother, Eli, had supported the family.

In 1882 Martha was aged 22 and still emotionally attached to her mother. We have already noted the closely competitive relationship between Sigmund and his sister Anna during their childhood: we now find that Anna and Eli became engaged six months after Sigmund and Martha, and married the following year. Sigmund came to feel strong rivalry and hostility to Eli – he chose not to attend Anna and Eli's wedding – which was only mitigated when Eli and Anna emigrated to the United States ten years later. Neither Martha's brother nor her mother approved of her choice of partner.

Sigmund was concerned to further his studies and become established professionally and financially before marrying, but over the next few years the couple saw little of each other. Martha agreed to go with her mother to live in Wandsbek, near Hamburg, while Sigmund undertook research and then worked as a resident in the Vienna General Hospital. With the help of a travelling grant, he then visited the Salpêtrière in Paris for 19 weeks to study with Charcot, an experience which changed his interests from neurology to neurosis and hypnosis. Of great significance is Masson's discovery (1985) that while in Paris in 1885–1886, Sigmund was exposed to considerable clinical and written evidence of the physical and sexual abuse of children.

Sigmund and Martha married in Wandsbeck in September 1886 – he was aged 30 and she 25 – with Sigmund announcing to Martha that she must now expect to belong to his family and no longer to her own. Over the next eight years they had six children: the last, Anna, was born in 1895, when Sigmund was aged 39, and it was she who was to become the closest to Sigmund, and the one to take up the torch of his work.

Adolfine was the only one of Sigmund's siblings not to marry, for the family designated that she would remain single in order to look after Amalie. This she did, and for the rest of her life she was dominated by her demanding mother.

Professionally, Sigmund was on the threshold of describing psycho-analysis. He had been corresponding since 1887 with Fliess and collaborating with Breuer on hypnotic techniques. *Studies on Hysteria* (Breuer & Freud) was published in 1895, and in May 1896 Sigmund courageously presented his paper 'The aetiology of hysteria' (Freud, 1896) to the Vienna Society of Pyschiatry and Neurology, in which he proposed that sexual seductions in childhood underlay adult neuroses. A significant element in the icy reception from Krafft-Ebing, the Society's Chairman, must have been that *he* suffered from hysterical symptoms and clung resolutely to a belief in their organic origins.

Sigmund was also much preoccupied with death and loss, and he had superstitiously predicted that he would die at the age of 40 – incidentally, the age Jacob had been when his father Schlomo had died. Sigmund's prediction of a personal crisis in 1896 was realised; however, not as he had anticipated. For in June his father fell terminally ill and he died in October, aged 81.

During that year, Martha's younger sister Minna moved in to live permanently with the family, and it is widely reported that thereafter Sigmund sustained a closer relationship with Minna (who, like his mother, may have shown 'masculine' character traits) than with Martha. Martha chose the role of obliging housewife who organised domestic life around her husband's professional work.

Within a few month's of his father's death, Sigmund's recurrent psychosomatic symptoms worsened and were accompanied by severe anxiety, depression, and morbid fears of dying; and he embarked on his self-analysis. It quickly led Sigmund to renounce his theory that childhood seduction underlay adult neuroses, although not without considerable conflict. It is worth noting that in his famous letter to Fliess (dated 21 September 1897) announcing his retraction of the seduction theory, Sigmund found himself unable to accept that "... in every case the father, not excluding my own, had to be blamed as a pervert" (Freud, 1897). We are left to wonder whether actual experiences or exposure during his childhood were now unacknowledgeable to Sigmund. He concluded that children *imagine* sexual experiences: modern clinical experience teaches us differently (e.g. Baker & Duncan, 1985).

The first of Sigmund and Martha's children to marry was Mathilde, at the age of 21, in 1909 (on the same day that Sigmund's brother Alexander married), followed in 1913 by Sophie when aged 20; Martin married in 1919 at the age of 30, Ernst in 1920 aged 28 and Oliver in 1923 when aged 32. Anna remained unmarried. Eight grandchildren were born between 1914 and 1924.

However, these same years were also marked by significant losses, which seemed to have a greater impact on Sigmund. Martha's mother died in 1910 – which indirectly must have affected him – and then his half-brother Philipp died in 1911. Emmanuel, of whom he had always remained fond, was killed in a railway accident in 1914. His favourite sister Rosa's son was killed in action in 1917, and Count Anton von Freund, a friend, benefactor and strong supporter of psycho-analysis, died of cancer in 1920. Only five days later, Sigmund heard of the death from influenzal pneumonia of his then favourite daughter Sophie: he first used the term "death instinct" in a letter to Eitington just three weeks later. In 1922 his 23-year-old niece Caecilie – Rosa's remaining child – committed suicide, and the following year Sigmund was numbed by the death from tuberculosis of his favourite grandchild Heinz, son of Sophie, when aged only four.

Amalie died in Vienna in 1930 and surprisingly Sigmund did not attend her funeral himself (was

TABLE I

| *Year* | *Life event* | *Theoretical transition* |
|---|---|---|
| 1896 | A year Sigmund predicted he would die; father's death (October) | Renounces seduction theory in 1897 (eventually published as *Three Essays on the Theory of Sexuality*, 1905) |
| 1910 | Mother-in-law's death (October) | – |
| 1911 | Half-brother Philipp's death (August) | Beginnings of break with Jung |
| 1914 | Half-brother Emmanuel's death (October) | Early ideas about masochism (in 'Instincts and their vicissitudes', 1915), written March–May 1915; drafts for 'Mourning and melancholia' (1917), written February–May 1915 |
| 1917 | A year Sigmund predicted he would die; Rosa's son Herman killed (summer); first sign of pre-cancerous lesion on palate (winter) | – |
| 1920 | Deaths of friend von Freund (January), daughter Sophie (January) and sister Mari's husband (September) | Final theory of death instinct (in 'Beyond the pleasure principle', 1920), completed July 1920 |
| 1923 | Cancer diagnosed (April); deaths of grandson Heinz (June), Emmanuel's wife (October), and brother-in-law Eli (November) | Writes 'The economic problem of masochism' (1924) in January 1924 |
| 1930 | Mother's death (September) | First draft of 'Female sexuality' (1931), written February 1931 |

he ill?) but was represented by his daughter Anna. He commented to Jones (Jones, 1964) that his mother's death induced in him "an increase in personal freedom, since it was always a terrifying thought that she might come to hear of my death", and "no grief otherwise". Ambivalence?

Earlier, in 1917, Sigmund had first noticed a lesion of his palate, which was diagnosed as cancerous in 1923. The numerous subsequent operations brought Sigmund and his daugher Anna closer still; for she was virtually the only person he allowed to nurse him, a task she accepted with dedication.

There would appear to be coincidences between these personal events and developments in Sigmund's theoretical work (Table I), although, again, we should be wary in our speculations. Sigmund appears to have reacted to many actual or threatened losses with a renewed intellectual vigour, and especially in areas which were conflictual for him personally.

Only a few members of the family became involved in psycho-analysis: Martin (a lawyer) managed the movement's independent publishing company 'Verlag' and Ernst (an architect who came to London in 1933) supervised translations of Sigmund's works and edited his correspondence. Sophie's son Ernst became a psycho-analyst, and Anna (initially a teacher) was psycho-analysed by her father, who gave her one of the special rings to inaugurate her into the 'inner circle' in 1920, and she became a member of the Vienna Psycho-Analytic Society two years later. Her psycho-analytic work with children is respected world-wide.

Sigmund, Martha, Anna, Minna, Mathilde and her husband, Martin and his family, Alexander, and grandson Ernst fled to London in 1938 to escape the Nazi terror, but four of Sigmund's sisters perished in the holocaust - Adolfine in Theresiensdat, Maria and Pauline in Treblinka and Rosa in Auschwitz. Sigmund never knew of their fate: for on 23 September 1939 he died, aged 83. Martha survived him by 12 years; Anna died in 1982. Their ashes lie in Golders Green Cemetery.

## Conclusions

Jacob was an adventurous and progressive man, prepared to explore beyond traditional boundaries. He encouraged his son Sigmund to explore ideas, but also gave him the conflictual communication, "don't look (into my background) too much". Sigmund was already exposed to puzzles about inter-generational relationships because of the structure of his family, and he seems to have experienced disturbing sexual events in his early life. He grew up as an idealised and parentified child, but probably also was caught up in an increasingly conflictual relationship between his parents. Sigmund admired his father when he was young, but Jacob's personal and emotional decline followed the drama of the family's break-up and exaggerated Sigmund's mixed feelings towards him – which he only became aware of when Jacob died. Perhaps the self-important son felt responsible for his family's predicament.

As he grew up, Sigmund remained closer to his doting mother than to his more withdrawn father, and he came to show similar character traits; for example, a tendency to be self-centred and authoritarian. His wife showed many of the opposite traits.

When a young medical practitioner, Sigmund was driven by a desire to make a name for himself: this he most certainly achieved. During the growth of the psycho-analytic movement he was equally determined to lead the group in the direction of his own ideas, at the cost of bitter estrangements from a number of his followers.

There can be little doubt that most unprejudiced clinicians have found derivatives of Freud's theories valuable, but also that some of his original opinions must be modified by subsequent findings. Freud's work was dominated by postulates about unacknowledged secrets, real or imagined traumata too alarming to be admitted into everyday consciousness, sexuality, death and loss, cross-generational coalitions, and the formative relationships between infants, mothers and fathers. I have outlined significant events in the story of the Freud family which may well have sensitised Sigmund to the creative discoveries he made. It is also possible to understand how family influences could have produced blind-spots and distortions in his theorising. As it is said, *when it comes to self-analysis, beware the counter-transference!*

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# Multiple Personality

## A Symptom of Psychiatric Disorder

THOMAS A. FAHY, MELANIE ABAS and JEREMY CHRISTIE BROWN

A case is reported of a young woman presenting with symptoms of so-called multiple personality disorder. It is proposed that this condition should be viewed as a non-specific psychiatric symptom.

Interest in so-called multiple personality disorder (MPD) has waxed and waned since the first description of a case by Mitchill in 1816. Two British cases were reported soon after this (Mayo, 1845; Skae, 1845), and by the turn of the century a wave of interest followed the demonstration of the remarkable effects of hypnosis. A renewed enthusiasm for the diagnosis has been evident since 1970. Bliss (1986) estimates that of the 300 case reports in the literature, at least 79 were reported in the decade after 1970, in contrast to the eight cases reported in the previous decade. Almost all of these reports have come from North America, where recent sensational biographical accounts of patients also originated (Thigpen & Cleckley, 1957; Schreiber, 1973; Hanksworth & Schwarz, 1977; Keyes, 1981). In the past 20 years only one case report has appeared in the British literature (Cutler & Reed, 1975). British psychiatrists have been sceptical of the validity of the diagnosis, echoing critics from the nineteenth century who believed that these patients were clever, manipulative or suggestible 'mythomaniacs' (Ellenberger, 1970). However, following the example of DSM–III, MPD will achieve recognition as a separate diagnosis with operational criteria in ICD–10 (World Health Organization, 1987), where it will be classified as one of the dissociative disorders of memory, awareness and identity. In the light of increasing interest in the disorder, doubts about the validity of the diagnosis, and the wide disparity between the American and British literature, we report the case of a woman presenting at the Maudsley Hospital who fulfilled these diagnostic criteria.

## Case report

### Personal history

The patient was a 31-year-old single Caucasian woman. Her parents were in good health and there was no family history of psychiatric illness or epilepsy. She described her mother as defensive and irrational and her relationship with both parents was poor.

According to her mother, the patient was perpetually frightened as a child. She did well academically at school until she was 14, when the family changed address. At this time she became increasingly anxious, refusing to attend school, and she was assessed by a school psychologist. She had always been shy and made few friends during her school days.

The patient reports that she was sexually assaulted by an uncle and a stranger when she was seven years old. Her recollection of the incident was patchy and at times she has been unsure if the assault took place. Her mother had no knowledge of the incident.

She left school at 15 years of age without taking examinations, but received home tuition for a short time. She worked briefly as a shop assistant when she was 16, and commenced three years of full time voluntary work when 23. After this there were no periods of paid work for longer than one week but she continued irregular charity work, including work with epileptic children. She lived at home until she was 26, when she moved into an epilepsy hostel, and she obtained a flat of her own three years later.

Menarche was at 15 years. She is bisexual but prefers women. She has had several short-lived relationships with both sexes, including some sexual contact, but she has never had sexual intercourse.

### Previous medical and psychiatric history

At the age of 15 she was admitted to a psychiatric hospital following the first of many overdoses taken before she turned 18. Most of these parasuicides followed arguments with her parents. She was treated with antidepressants, ECT, minor tranquillisers and hypnotherapy before she was 19. Her local psychiatric hospital 'blacklisted' her when she was 20. She described blackouts since 14 years of age, with visceral and olfactory aura followed by a sudden loss of consciousness lasting a few minutes. She bit her tongue but was never incontinent during the attacks. She was treated with phenytoin and phenobarbitone, with some reduction in the number of attacks. At 20 years of age she was investigated for an 18-month history of unsteadiness and clumsiness, but no abnormalities were detected. Between 20 and 25 she was reasonably well, and did some regular work. After leaving home she recommenced taking frequent overdoses and the number of blackouts increased, leading to her admission to the National Hospital for Nervous Diseases for investigation. Many seizures were observed and were thought to be non-epileptic, leading to the discontinuation of anticonvulsants. Subsequently, she was referred to the Maudsley Hospital and continued to take frequent overdoses until a brief admission for assessment.

At 27 years of age she complained of depression, poor sleeping, losing track of time, depersonalisation and derealisation. She also mentioned hearing angry voices and she stated that a robot took over her body when she was unable to cope. She said that it was like "an internal mother" and she wanted to destroy it. She later said that she saw the robot and the voices as parts of her own personality. She gradually improved without medication.

She has been seen regularly in the out-patient department since her referral. She has presented to the emergency clinic on many occasions complaining of depression, anxiety, concern about her weight, and suicidal thoughts. These episodes are usually short-lived and she has responded to brief admission. During two of her admissions she had some biological symptoms of depression and at these times she appeared to benefit from antidepressants. She has remained socially isolated, declines to attend a day centre but pays weekly visits to the Samaritans for counselling.

On two occasions this patient has presented with a history suggesting multiple personality disorder. At 28 years of age she attended the emergency clinic saying that she needed to talk to a doctor. The interview consisted of two parts, one where the patient presented her usual character and another where she introduced herself as Anna, a young girl living inside the patient. 'Anna' said that she had been upset by a visit to the patient's parents and she needed someone to talk to. The patient appeared to be fully aware of the content of this conversation and added that she felt that people did not understand her problems. The patient did not discuss these problems or present in this manner again until two years later, following a change in her ward doctor (she had requested a female doctor).

During her first interview with the new doctor (MA), she said that there were five people inside her. Joe was a 19-year-old boy who was quiet, good with children and enjoyed gardening. Helen was 17 years old and was the opposite of Joe, lively, outgoing and articulate. Anna was an unhappy six-year-old who had been sexually molested. Jessie was a cheerful nine-year-old. Katherine was a three-year-old who was recovering from a coma. The patient said that she had 'carried' Jessie around for three years, thinking she was dead at first but later realising that she was comatose. Her personalities were able to 'come out' and take over her body and mind and behave as individuals. She said that each of these 'personalities' was like a part of her own personality, but they were also separate and she knew them as individuals. The personalities had been present for five years; Joe and Jessie had come first. They talked among themselves and sometimes addressed the patient or spoke about her in the third person. Occasionally Helen did things which the patient did not like, such as showing off or irritating other people. Under Anna's influence she had recently visited a toy shop and bought a teddy bear. When the patient was asked by the interviewer to introduce one of these personalities the character of Jessie appeared, speaking and behaving like a young child.

The patient said that she went to the film 'The Three Faces of Eve' and read the book *Sybil* one year after the onset of these experiences, and realised then that they were likely to be symptoms of multiple personality disorder. The patient said that she would prefer to integrate all of these personalities. She denied any psychotic symptoms, depression or suicidal ideas.

On direct questioning she said that she had occasionally experienced periods of lost time; once she thought she had spent the evening sitting down but was surprised on getting up to find that the flat had been tidied, the bed made and a meal prepared. On another occasion she realised that she had lost all recollection for the events of a previous day when a woman asked her questions which implied that she had spent some time at the Samaritans.

The patient presented consistently in this state at several interviews over a four-month period. A decision was made, in the light of her previous psychiatric history, to avoid concentrating on the alternate personalities. This plan was followed and the patient, remaining off antipsychotic medication, became less preoccupied with her other personalities but continued to attend to the out-patient department for supportive counselling. Her case was considered by the psychotherapy unit, who considered her unlikely to benefit from therapy in view of the severe nature of her disturbance and her doubtful motivation.

### Investigations

Physical investigations were normal. The patient's score on the Dissociative Experiences Scale (Bernstein & Putman, 1986) was 37 (average 4.38 for normal controls). Although seizures have become infrequent, an EEG was repeated; she had an attack during the testing but there was no evidence of epilepsy on the trace.

## Discussion

The DSM–III criteria for diagnosis of MPD are as follows (American Psychiatric Association, 1980):

A. There exist within the individual two or more distinct personalities, each of which is dominant at a particular time.

B. The personality that is dominant at any particular time determines the individual's behaviour.

C. Each individual is complex and integrated, with its own unique behaviour patterns and social relationships.

This patient fulfilled these criteria, accepting the difficulty in establishing when a personality is sufficiently complex to fulfil criterion C. These criteria have been justly criticised as unelaborated and open to a wide range of interpretation (Ludolph, 1985). In order to establish if this patient resembles recently reported American cases, it is relevant to compare her with those described by Putnam *et al* (1986), who have given a detailed description of the syndrome based on a survey of clinicians treating 100 cases. Their study reported that 92% of patients were female, the period from first psychiatric contact to the diagnosis of MPD averaged 6.8 years, and the average age at diagnosis was 31.3 years. The most common alternate personalities were children; episodes of amnesia were reported in 98%; suicide attempts were made by the majority of patients; and 95% of patients had received one or more psychiatric diagnoses prior to the diagnosis of MPD, most commonly depression, neurotic disorder and personality disorder. A history of significant childhood abuse was reported in 93% and sexual abuse was reported in 83%. Somatic symptoms were also noted to be common, and seizure-like episodes were reported in more than 10% of cases.

The history and psychopathology of this patient have many features in common with those cases reported by Putnam *et al.* She has a marked dissociative tendency, as evidenced by the history of pseudo-seizures and amnesic spells, and finally by her presentation with MPD. This facility with hysterical dissociation appears to be at the root of MPD, but it is clear that the dissociation of personality is but one of a repertoire of dissociative symptoms which these patients exhibit. The non-specificity of the diagnosis is further highlighted by overlap between the diagnosis of MPD, borderline personality disorder (Buck, 1983; Clary *et al*, 1984), and Briquet's syndrome (Bliss, 1986), and by the failure to find a clear pattern of psychiatric diagnosis among the relatives of patients (Putnam *et al*, 1986).

The effects of culture and clinical practice on MPD symptoms is a controversial subject. In the American literature it is evident that once the diagnosis of MPD is made by the clinician, this becomes the primary diagnosis and treatment is focused on reintegrating the personality. The mean length of time in treatment with the reporting therapist in the study by Putnam *et al* was 37.2 months, and 64% were being treated for MPD-related symptoms. In contrast, this patient's problem was seen as secondary to a personality disorder with superimposed dysphoria, and a limited amount of attention was focused on the symptoms of MPD. It is our contention that sanctioning the dissociative behaviour, by concentrating on symptoms or encouraging symptomatic behaviour, may lead to reinforcement and entrenchment of the relevant symptom. This patient expressed her own anger and sadness as the emotions or attitudes of her other personalities. A less dramatic variant, exemplified by Oscar Wilde's claim "I am certain that I have three separate and distinct souls" (Ellmann, 1987), may be a common and non-pathological experience.

As part of her treatment, our patient was encouraged to acknowledge her feelings as part of her own character and to say 'I' rather than to use the name of one of her personalities. She was encouraged to discuss her problems openly, including the experience of sexual abuse. The personality of Anna became less dominant as the patient discussed these problems, lending further support to our hypothesis.

Protagonists of MPD as a distinct psychiatric disorder have failed to produce strong supporting genetic, physiological or epidemiological evidence. However, there is no shortage of evidence which suggests that a long-standing history of poly-neurotic disturbance and personality problems is very common in this group of patients. These difficulties form the foundation of hysterical dissociation of personality and, fascinating as the presentation of MPD may be, it should not distract from the underlying psychiatric diagnosis.

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# Concomitant Treatment of Neuroleptic Malignant Syndrome and Psychosis

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Two cases are presented in which psychotic patients with neuroleptic malignant syndrome were treated with bromocriptine and thioridazine simultaneously, with a resulting control of both problems. The authors feel that this method needs further study, in the light of the potentially large number of patients at risk for these illnesses. The use of creatinine phosphokinase level as an indicator of value in NMS is also discussed.

Neuroleptic malignant syndrome (NMS) is a complex and life-threatening reaction to neuroleptic medications, thought to occur in 0.5–1% of patients receiving these drugs (Caroff, 1980). Several authors have described this disorder, and attempted to define criteria for its diagnosis (Caroff, 1980; Kurlan *et al*, 1984; Guzé & Baxter, 1985), although these are still not totally established. It appears at present that 'classic' signs of NMS include autonomic instability, fever, rigidity and altered consciousness. Protocols for treatment have been suggested (Guzé & Baxter, 1985; Mueller, 1985; Suhayl, 1987; Allsop & Twigly, 1987), with bromocriptine being the most commonly accepted remedy for patients capable of taking oral medication. ECT has also been tried with some success (Addonizio & Susman, 1987).

Few authors, however, have addressed the issue of re-treatment in previous NMS patients (Pelonero *et al*, 1985). Indeed, if it is thought that 50% of patients will redevelop NMS even when treated with 'less potent' neuroleptics (Shalev *et al*, 1985), this leaves the potential for many people to remain psychotic, with no chance at a reasonable life. It seems imperative, then, to attempt any treatment that might spare an NMS patient from being trapped in a pre-pharmacological era. We present two cases where concomitant treatment with bromocriptine and thioridazine was tried as a last resort, and met with some success.

## Case reports

### Case one

LL, a 32-year-old black male with a long history of schizophrenia, had been fairly well maintained on depot fluphenazine. He was initially seen approximately one year earlier by one of us (JH) when he presented with 'catatonia'. He was noted to have extreme rigidity, and difficulty with both talking and swallowing. His temperature and blood pressure, however, were within normal limits. A creatinine phosphokinase level (CPK) at that time was 1152 IU/l (normal 21-232 IU/l). He was given no further neuroleptic and was treated with bromocriptine and amantidine. The symptoms resolved rapidly, and he was discharged from the hospital non-psychotic with normal vital signs, no rigidity and a CPK of 38 IU/l. The diagnosis at this time was felt to be strongly suggestive of NMS, but was not conclusive because the 'classic' symptom of elevated temperature was absent. The patient was followed monthly as an out-patient on lorazepam, 2 mg three times a day. For eight months he remained manageable at home, with no gross evidence of acute psychosis.

He then began to suffer from auditory hallucinations and became so distressed that he was brought back to the hospital by his family. An attempt was made for five days to control his behaviour with increased doses of lorazepam, up to 2 mg by mouth every four hours. He remained paranoid and continued to talk to people who were not present. He was begun on thioridazine at 50 mg each night, while CPK values and vital signs were carefully watched. CPK values were within normal limits, at 189 IU/l prior to initiation of thioridazine and 225 IU/l after three doses. Within 48 hours he was calm, with decreased subjective distress, and a marked reduction in vocalised hallucinations. His CPK levels, however, began a steady rise with the neuroleptic, reaching 328 IU/l after four doses and 2440 IU/l after five. There were no signs of autonomic instability. Thioridazine was discontinued after the third day, and his CPK level peaked when checked 12 hours later at 6450 IU/l, 100% MM fraction. (Fractionation of CPK helps determine the various organs of its possible origin: 100% MM fraction indicates that the CPK measured is essentially all from striated muscle, a consistent sign of NMS-induced muscle rigidity.) The CPK dropped toward normal over the next three days. Unfortunately, during that time the patient was receiving no neuroleptic medication and had increasingly severe hallucinations and begged for relief; at times he became aggressive toward the staff due to his extreme fear. Increasingly large doses of lorazepam were not successful in controlling him. Pentobarbital (200 mg intramuscularly) and diazepam at 10 mg intramuscularly were also tried without success. Restraints were required on several occasions.

Carbamazepine, a drug with some antipsychotic effects (Jahn *et al*, 1984; Mueller, 1985) was begun as an alternative therapy, some six days after the thioridazine was discontinued. Once more he showed a change from a CPK which was steadily falling toward normal – even with the use of intramuscular medications and restraints prior to receiving carbamazepine – to a CPK which peaked at 1206 IU/l 24 hours after this drug was begun. Also, within this time he had a fever of up to 38.3°C (101°F) and a fluctuating blood pressure. As soon as the fever was noted the carbamazepine was stopped, and treatment with bromocriptine was again initiated at 2.5 mg by mouth three times a day. The patient had rapid resolution of NMS symptoms but resurgence of psychosis. His CPK was normal ten days after discontinuance of the carbamazepine.

To summarise to this point, here was a patient that had a clear psychosis, who improved psychiatrically only to reveal many symptoms of NMS, and who exhibited CPK levels that rose rapidly on thioridazine and carbamazepine. We believe that this patient represents a point on the continuum of NMS patients, with some cases developing abnormal enzyme levels before autonomic instability appears. This concept of NMS as a spectrum of events rather than a single 'malignant syndrome' is also found useful by other researchers (Fogel & Goldberg, 1985; Addonizio *et al*, 1986). We feel that although the 'diagnosis' of NMS was clearly made only at the time of his fever, this patient indeed suffered from symptoms which epistemologically implied NMS on several occasions. Ten days after the carbamazepine was discontinued, and some 16 days after the thioridazine was stopped, this patient had normal vital signs and a normal CPK, but was still psychotic.

It was decided at that time, in consultation with his family, to slowly re-introduce thioridazine at 50 mg each night, while maintaining him on 2.5 mg of bromocriptine three times a day. Such concomitant therapy was intuitively decided, but we also realised that this patient had responded to bromocriptine one year earlier while he still had depot medications in his body. CPK values were monitored at least daily, and vital signs were checked at frequent intervals. The patient's vital signs remained stable, and he was significantly improved clinically after receiving three 50 mg doses of thioridazine. Following four days of concomitant treatment, the neuroleptic was increased to 75 mg at night, and after six days to 100 mg at night. He still received 2.5 mg bromocriptine three times a day as well. The patient continued a steady decrease in voiced hallucinations, and by day 5 of this regimen he was calm for the first time in two weeks. For the following four days he was no longer a management problem and continued to become more coherent.

On the tenth day of concomitant therapy, his CPK rose to 335 IU/l and his bromocriptine was increased to 5 mg three times a day. The following day revealed an enzyme level of 706 IU/l. Because of the intuitive nature of this regimen and the unknown potential for redeveloping NMS under such conditions, the trial was abandoned: note, however, that the patient showed no other signs of NMS at any time of concomitant treatment. Thioridazine was discontinued, and on only bromocriptine at 5 mg by mouth three times a day, the CPK peaked at 1671 IU/l at the checkpoint 24 hours later.

The patient's family decided to take him home at this stage, and he was discharged home non-psychotic and with no medication. Within one day at home and off bromocriptine he became ill and returned to the hospital. There he had a temperature of 38.6°C (101.4°F) and revealed 'classic' NMS symptoms of fever, rigidity, and autonomic instability as represented by widely fluctuating pulse and blood pressure. The diagnosis was felt to be unarguable, but further attempts to treat both the illnesses were abandoned, and only control of his physical symptoms was attempted at this time, with barbiturates. The patient was ultimately discharged to the state hospital nine days after readmission to our facility when his psychosis returned. After three months there on no medication except benzodiazepines, he was restarted on thioridazine and tolerated it well, with complete remission of psychotic symptoms. Ongoing monitoring continues, but it seems evident that this patient tolerated bromocriptine and thioridazine concurrently for almost two weeks in an attempt to keep him both non-psychotic and free from NMS symptoms. Furthermore, this patient's penchant to NMS appears to have faded with time.

### Case two

EE, a 28-year-old black male with a history of several years of bipolar disorder, had been maintained for at least a year on lithium and haloperidol. He was first seen by us when he became acutely psychotic after discontinuing his medication for approximately one month. The patient was initially medicated with 10 mg haloperidol (*i.m.*), which was changed to droperidol due to his extreme aggressiveness. He received 20 mg (*i.m.*) total dose of this drug over the next four hours. Twelve hours later he was given 10 mg of haloperidol orally. Within 30 minutes of this dose (16 hours after his first dose), the patient was noted to be vomiting. We were called because the patient became diaphoretic and complained of 'feeling sick'. On examination, he was markedly rigid and diaphoretic, with a blood pressure of 160/100 and a pulse of 120. His temperature was, unfortunately, not measured at that time. All vital signs had been within normal limits three hours previously. The patient had marked cog-wheeling on passive movement of his arms. An immediate CPK was obtained, and was 5397 IU/l, 95% MM fraction.

A diagnosis of acute-onset NMS was made, and the haloperidol was discontinued. Bromocriptine was begun at 2.5 mg orally three times per day. In spite of the possible dangers associated with NMS and lithium (Ingall & Tennant, 1986), it was decided to continue his lithium at 900 mg per day, since we would be monitoring him very closely and he was very large and hostile. His CPK rose to 8022 IU/l the next morning, and fell to 4370 IU/l on the third day. During this time the patient required almost constant restraint, and at one point required 15 people to control him. It was felt that since we had had some success with the patient in case one, thioridazine could be added to his regimen, again used concomitantly with bromocriptine. This was started on day three at 50 mg at night, and after two doses it was increased to 100 mg. His CPK continued to fall smoothly, and was 355 IU/l by the seventh day after onset of NMS (i.e. after five days of concomitant treatment). His behaviour also improved, but he still remained manic and hostile. Continuing adjustment of his medications over the next 15 days led him to be ready for discharge. He was non-psychotic, quiet, calm, and co-operative. He was sent home with a normal CPK, on 1800 mg of lithium carbonate per day (level 0.8 mmol), 200 mg thioridazine at night and 7.5 mg bromocriptine three times per day. He had also given informed consent once he was stable enough to understand our treatment. At one-month follow-up the patient's CPK was 314 IU/l, at two months 263 IU/l, at three months 345 IU/l and at four months 217 IU/l. He has remained medically stable, afebrile, and without recurrence of NMS or psychosis. Monitoring continues, and a gradual reduction of thioridazine and bromocriptine is being initiated.

## Discussion

These cases seem to be a model for the 'catch-22' situation of the NMS patient. Indeed, in case one, a brief challenge with a low-potency neuroleptic threatened a resurgence of life-threatening symptoms even while the patient was improving psychiatrically. The patient in case two was physically large and aggressive, mandating effective control for the safety of both himself and the staff. The fact that changes in CPK values occurred before the onset of other autonomic symptoms allowed us to carefully watch the effects of treatment. This supports the idea that elevated CPK values are a major sign of NMS, and should perhaps be considered among the 'classic' signs of NMS (Fogel & Goldberg, 1985). Some authors have been successful in controlling psychosis in a previous NMS patient by changing the type of treatment; i.e. using an antidepressant, anticonvulsant, or ECT. We believe that the two cases presented here are the first reported where a definite NMS existed and was terminated while the patient was still being treated with antipsychotic drugs.

Although the mechanisms causing NMS are not clearly understood, it is known that bromocriptine can resolve symptoms. Here it was felt that the possible risks of concomitant use of both drugs were justified, especially since we felt confident that monitoring CPK levels often would alert us to ensuing or worsening NMS. The alternatives, after all, were few, being essentially to tie the patients to their beds until long-term commitment could be arranged.

NMS is a severe, often unrecognised complication of neuroleptic treatment. It carries a mortality rate of 20–30% (Mueller, 1985), and has an incidence of at least 1% of the thousands treated with neuroleptics each year. Experience seems to indicate that many patients will eventually tolerate antipsychotics again, although the reasons for this remain as unclear as the causes of NMS itself. Any therapy that offers a chance to treat a patient who again becomes psychotic after being diagnosed with NMS should be explored. We would also urge other clinicians and investigators to obtain a baseline CPK on all patients with prior neuroleptic treatment.

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# Spastic dysphonia and denervation signs in a young man with tardive dyskinesia

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Pathophysiological theories of tardive dyskinesia (TD) suggest the possibility of structural changes in the central nervous system of patients with TD. This report describes a case of choreoathetoid dyskinesia and spastic dysphonia associated with clinical and electromyographic signs of muscle denervation. The findings of this case suggest that the neurological syndrome originates within basal ganglia nuclei but may also extend to the peripheral neuromuscular system.

The therapeutic benefits of neuroleptic drugs are limited by their extensive side-effect profile. Neurological adverse effects are the most prevalent and serious, particularly the syndrome of tardive dyskinesia (TD) (American Psychiatric Association, 1980). The TD syndrome is characterised by involuntary movements that most commonly involve the oral–facial–lingual regions, but which can occur in any body region (Burke, 1984). These movements are characteristically choreoathetoid in nature but can manifest themselves in other forms including dystonia, tics and akathisia (Burke, 1984). Although infrequent, there have been prior reports describing the involvement of the anatomical structures of respiration (Weiner *et al*, 1978), deglutition (Moss and Green, 1982) and speech (Maxwell *et al*, 1970; Nurnberg & Greenwald, 1981; Bond *et al*, 1982; Ravi *et al*, 1982; Nevlud *et al*, 1983; Gerratt *et al*, 1984). Most cases of TD are mild and non-progressive in nature, although in some patients the symptoms can be severe, persistent and potentially irreversible (Kane *et al*, 1986). There is great concern within the psychiatric field that TD reflects neurotoxic effects of chronic neuroleptic drug treatment (Jellinger, 1977). However, there is no conclusive evidence demonstrating structural changes in the central nervous systems (CNS) of patients with TD. In this report we describe a case of neuroleptic-induced side-effects consisting of choreoathetoid dyskinesia and spastic dysphonia associated with clinical signs and electromyographic signs of muscle denervation.

## Case report

The patient is a 23-year-old white male whose psychiatric illness began at 17. At that time the patient showed a steady progression of abnormal thought and behaviour, which ultimately developed into a florid psychosis consisting of agitation, thought disorganisation, auditory hallucinations, and paranoid delusions, requiring hospital admission. The patient responded well to treatment with trifluoperazine (40 mg/d) and benztropine (6 mg/d) but was discharged with residual symptoms of inappropriate affect and pathological ideas of reference. Over the ensuing year, there were several upward and downward adjustments of the drug dosage (trifluoperazine range 10–60 mg/d), and the patient was ultimately treated with haloperidol (30 mg/d) while continuing on benztropine (6 mg/d). Over the next year the dosage of haloperidol was progressively decreased from 30 mg/d to 5 mg/d because the treating psychiatrist began to notice perioral movements.

When he had been on neuroleptics for approximately three years and while he was taking haloperidol (5 mg/d), the patient first experienced difficulty speaking. His voice developed a raspy quality and tended to break periodically in mid-sentence. This steadily progressed over the next year to the point of total aphonia. The patient would try to speak but was unable to generate tonal sound. He could converse only with great difficulty. The patient underwent otolaryngological and neurological evaluations, which were negative, identifying no organic basis for his speech problem. His aphonia was subsequently considered by a speech pathologist to be a symptom of his psychiatric illness (hysterical aphonia). Approximately a year and a half following the first stages of voice loss, the patient was referred to the Movement Disorders Clinic of Hillside Hospital at the Long Island Jewish Medical Center for evaluation.

Examination revealed a well developed young man, alert, cognitively intact and wholly non-psychotic. The neurological examination was grossly intact except for speech and motor system signs described below. There were dyskinetic movements of his tongue and occasional involuntary deviation of his tongue to the right on protrusion. There also were mild involuntary choreoathetoid movements in the distal upper and lower extremities. In addition, he had a fine postural tremor of his right upper extremity and he was diffusely hyperreflexic with plantar flexor responses. The most dramatic feature of the clinical examination was that the patient was unable to speak and had to struggle to communicate. His sternocleidomastoid and accessor respiratory muscles would contract vigorously and his face turn red with effort, but he could emit no sound, not even a whisper, other than the expulsion of air in a manner of speech resembling laryngectomised patients. His family history was negative for neurological and psychiatric disease. A diagnostic work-up which included laboratory tests (serum chemistries, complete blood count, sedimentation rate, ceruloplasmin, VDRL, ANA, $T_4$, TSH, urinalysis), EEG and CT scan were negative. A tensilon test and then a sodium amytal interview were performed to rule out myasthenia gravis and psychogenic factors as the cause of the patient's aphonia.

Working on the assumption that the aphonia was a manifestation of the patient's neurological side-effect syndrome, the patient was further evaluated with a standard protocol of provocative tests with bromocriptine (5 mg *p.o.*), benztropine (4 mg i.v.), haloperidol (5 mg i.v.) and physostigmine (2 mg i.v.), used in the Movement Disorder Clinic to pharmacologically characterise symptoms of TD (Lieberman *et al*, 1988). The patient's response pattern showed significant TD symptom worsening with bromocriptine, improvement with physostigmine and equivocal responses to benztropine and haloperidol. The most dramatic aspect of the patient's response was the significant improvement in his speech with physostigmine.

Following the evaluation procedures, the patient was withdrawn from haloperidol. Over the next 12 weeks, his involuntary movements diminished and gradually his voice began to improve. However, ultimately he relapsed, with recurrence of severe psychotic symptoms necessitating hospital admission and retreatment. Although his behaviour improved with fluphenazine, within four weeks of retreatment his aphonia had worsened to its prior severity. Medication was stopped. At that time, on neurological examination, in addition to the previously noted findings, the patient exhibited hemi-lingual atrophy. An electromyograph (EMG) performed in three extremities revealed a mild increase in polyphasic potentials. This was also seen in the tongue, trapezius and sternocleidomastoid muscles; in addition, there were fibrillations in the right side of the tongue and in the right sternocleidomastoid. The motor and sensory nerve conduction velocities and the H reflexes and f responses were all normal. These findings were interpreted as compatible with mild acute and chronic denervation and reinnervation.

After the initial evaluation period the patient was started on physostigmine (2 mg *p.o.* t.i.d.). In the next three weeks he exhibited dramatic improvement in his voice, recovering approximately 50% of his speech deficit, but his mental status worsened badly. It was decided to give him a trial of clozapine in the hope of alleviating his psychotic symptoms while preserving his recovered speech. Clozapine is an atypical neuroleptic (being used on an investigational basis) that does not produce extrapyramidal effects such as Parkinsonism and dystonia nor cause TD – at least, not to the same extent as classical neuroleptics (Lieberman *et al*, 1986. The physostigmine was stopped, he was started on clozapine and the dose titrated to 700 mg/d over four weeks. The patient had an excellent therapeutic response in terms of a reduction of psychopathology and tolerance of medication without serious side-effects. He sustained this level of treatment response and was subsequently discharged from the hospital without significant residual schizophrenic psychopathology.

After two years' follow-up the patient remains in remission from his psychiatric illness, his voice has completely normalised, and other TD manifestations have significantly declined, with only mild choreoathetoid movements of the tongue and feet remaining. Hemi-lingual atrophy is no longer observed. A follow-up EMG revealed no sign of acute denervation and only minimal signs of chronic denervation.

## Discussion

The evidence in this case suggests that the patient's speech disturbance was caused by his neuroleptic treatment and probably arose from the same pathogenic process that gave rise to the typical manifestations of TD. Accepting this premise, the case may be discussed as reflecting both typical and atypical features of TD.

On the one hand the patient developed classical choreoathetoid symptoms of TD in typical body regions (oral–lingual and distal upper and lower extremities) after moderate neuroleptic exposure. The symptoms were initially reversible with neuroleptic withdrawal and subsequently responsive to cholinergic agonist treatment. This conforms to the prevailing pharmacological theory of TD, which states that TD is a condition of hyperdopaminergic and hypocholinergic function (Gerlach *et al*, 1974). On the other hand, there also was involvement of speech mechanisms and electrophysiological signs of denervation and atrophy.

Previous reports of TD involvement of motor speech production have predominantly described disturbances in articulation, e.g. hyperkinetic dysarthria and stuttering (Maxwell *et al*, 1970; Nurnberg & Greenwald, 1981; Bond *et al*, 1982; Ravi *et al*, 1982; Nevlud *et al*, 1983; Gerratt *et al*, 1984), and respiration (Weiner *et al*, 1978). The speech problem in the case described appeared to be purely a disturbance in phonation, indicating the involvement of the laryngeal musculature. We could find no reports of similar cases of laryngeal dysfunction as a consequence of chronic neuroleptic treatment or manifestation of TD (although acute laryngeal dystonia has been reported (Solomon, 1977)), suggesting that this is either a rare manifestation of TD or has been undetected and underreported (Aronson, 1971).

This raises the question of what is the pathophysiological basis of the patient's drug-induced dysphonia. Phonation occurs when vocal folds are adducted to close the glottis, after which breath pressure increases subglotally until it becomes great enough to force the folds apart. There are three types of pathological condition under which these normal circumstances may not occur: (a) local pathology (e.g. ankylosis of the cricoarytenoid joints, tumours, inflammatory disease that is destructive to the vocal chords, or a systemic condition producing chord oedema); (b) specific diseases of the peripheral nervous system; and (c) CNS pathology (Moore, 1971). The latter two categories include neuromuscular diseases affecting the intrinsic laryngeal muscles, the neuromuscular junction, the vagus nerve and its branches, and lesions of the cortical and corticobulbar tracts. In this case the negative ENT examination rules out local pathology, and the absence of associated neurological signs, negative laboratory tests (Jolly and tensilon tests, serum CPK) and a progressive course makes it unlikely that the patient suffered from a common neurological disease. A complete neural lesion of the vagus (or its branches) also is ruled out by the absence of complete vocal chord paralysis and by the condition's reversibility. That suggests upper neuron (CNS) pathology. Innervation of the larynx originates in the pre-central gyrus of the cerebral cortex via corticobulbar tracts which sends fibres to the nucleus ambiguous and continue as special visceral efferent fibres of the vagus to innervate muscles of the pharynx and the larynx (Carpenter & Sutin, 1983). In addition, the motor cortex projects to and receives input from the basal ganglia via the corticothalamic tract and thalamocortical radiations (Carpenter & Sutin, 1983). This enables the structures of the basal ganglia (striatum, putamen, globus pallidus, substantia nigra) to modulate the motoric expression of speech (West, 1971).

Since neuroleptics are believed to produce neurological side-effects including TD by their actions in the basal ganglia, it is plausible that this was the basis of the patient's aphonia as well. Pathophysiological theories of TD have not adequately explained the syndrome's topographical variability, nor the selective vulnerability of individual patients. It is presumed, however, that the high frequency of oral–lingual involvement in TD is due to its large anatomical representation in the motor cortex (Carpenter & Sutin, 1983). If we extend this line of reasoning and postulate that neuroleptics, rather than disturbing basal ganglia functions generally, have selective anatomically specific effects, then differential symptom expression could be a consequence of which areas are most affected and their correspondence via thalamocoritcal and corticothalamic tracts with anatomically specific motor cortical areas. Thus a primary drug-induced basal ganglia disturbance could produce symptoms in discrete body regions, including laryngeal dysfunction, that would be mediated by corticothalamic and corticobulbar tracts. Although highly speculative, this would explain how the laryngeal musculature could be affected, although not why it has so rarely been reported.

The fact that the patient responded well to clozapine and did not redevelop aphonia is also consistent with this hypothesis. Clozapine has been shown to have less potent pharmacological effects in A-9 dopamine neurons in rodents (which correspond to the striatum in humans) than classical neuroleptics (Seeger *et al*, 1982). This is believed in part to be responsible for its inability to induce Parkinsonism and TD.

These findings raise certain important and controversial questions about TD: namely, whether neuroleptic drugs have neurotoxic effects; and whether the pathophysiology of TD is confined to the CNS or involves the peripheral nervous and neuromuscular systems as well. It is interesting to speculate to what extent lower motor neuronal systems might also be involved. Previous reports have described neuromuscular dysfunction in lower motor neurons at the spinal level and neuromuscular junction in patients with TD, reflected by absent H-reflexes, increased muscle fibre densities and irregular 'jitter' values (Crayton, 1980). In the case described, EMG signs of muscle denervation and muscle atrophy suggest pathophysiological involvement of the peripheral nerve and/or the neuromuscular end-plate. Since there was no demonstrable disease or lesion that would cause denervation of muscles, we have postulated that denervation may be due to inactivation of neuronal fibres projecting to lower motor neurons, which in turn innervate the affected muscles. Chronic neuroleptic treatment could cause upper motor neuronal inactivity by the induction of chronic depolarisation of striatal dopaminergic neurons (Chiodo & Bunney, 1983) or possibly by neuronal cell loss through transneuronal degeneration (Saji & Reis, 1987). This could cause an alteration in lower motor neural regulation of skeletal muscle (Drachman *et al*, 1982). Specifically, loss of upper motor neuronal activity would result in a decrease in lower motor neuron impulse transmission, generation of end-plate potentials and muscle membrane depolarisation that produces excitation–contraction coupling (Guth, 1968). This process of muscle denervation in turn leads to a decrease in resting membrane potentials; increased extra-junctional acetylcholine sensitivity and decreased junctional acetylcholinesterase activity (Guth *et al*, 1981). The fact that the patient was so responsive to cholinomimetic treatment may have been due to enhanced muscle membrane sensitivity, or alternatively to stimulation of striatal cholinergic neurons. This process could also be mediated by peripheral drug effects anywhere along the motor unit. Similar phenomena have been demonstrated at the motor end-plate in drug-induced myasthenia-like syndromes (Argoz & Mastaglia, 1979). Previous reports describing antibodies to acetylcholine receptors in patients chronically treated with neuroleptics have suggested the role of autoimmune factors in TD (Bradley *et al*, 1980; Lieberman *et al*, 1984).

Such a mechanism is consistent with the findings in this case.

An interesting feature of laryngeal musculature innervation is that it is bilateral (the nucleus ambiguous receives both crossed and uncrossed corticobulbar fibres) and normally exhibits hyperneurotisation (innervation of skeletal muscle fibres by more than one motor end-plate), whereas most other skeletal muscles have only one motor end-plate per fibre (Rossi & Cortesina, 1965). Such overlap and duplication of innervation could be the reason for the apparent infrequent involvement of laryngeal musculature in TD. In such cases, however, where it occurs, it may be very responsive to cholinomimetic treatment.

In summary, this case illustrates the rare involvement of laryngeal musculature in TD and suggests that the pathophysiology of this side-effect syndrome originates with CNS basal ganglia structures but may also extend to the peripheral neuromuscular system as well.

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# Predicting the Productive Research Psychiatrist

GORDON PARKER

Data were obtained for some 89 psychiatrists who were responsible for 372 first-author research publications over the period 1978–1984, to define predictors of productivity (rate of publishing in scientific journals). A principal components analysis suggested three key researcher dimensions, comprising 'track record', 'experience' and 'resource base' variables. The 'track record' dimension was the only significant predictor and was contributed to principally by the number of publications in the early part of the review period, number of citations to published work, rating by peers, and possessions of a research degree.

You can only predict things after they've happened
(Eugène Ionesco, Rhinoceros)

The capacity to predict those who might be productive in psychiatric research would be welcomed by many an interview committee, be it to make an appointment to a research position or to consider an application for a competitive grant. While numerous predictors are advocated informally (e.g. an academic record of excellence, an established track record in research, a higher research degree, a university base, or personality characteristics such as tenacity), there does not appear to be any empirical research that has established the utility of such variables for psychiatrists since the examination by Russell (1967), while for scientists in general, empirical research is minimal. Over (1982), for instance, examined the capacity of five variables to predict the publication rate of psychologists over a three-year period. Four variables explained 45.5% of the variance in the criterion measure, with earlier productivity accounting for most (33.8%) of the variance, and age (5.3%), academic rank (3.4%) and sex (3.0%) contributing slightly, while citation numbers did not enter the predictive equation.

Possible predictors of research productivity by psychiatrists are examined in this report. The focus on productivity (or, as defined in this paper, the rate at which scientific articles are published) should be briefly considered. In essence, the view is accepted that "a scientific experiment, no matter how spectacular the results, is not completed until the results are *published*" (Day, 1979), and it is assumed that research must have some minimum quality to be published in a scientific journal. The task is made easier by limiting consideration to published research (with some standards about publication in a 'scientific journal' being imposed), as the criterion variable is output as against more ineffable variables such as promise, potential, creative flair or quality. Promise and potential rely on proposing good ideas, and as Forsdyke (1983) has noted, "there is no such thing as a good idea. There are only plausibly good ideas." In contrasting the relative worth of 'promise' and 'performance' in research, Forsdyke also quoted Picasso: "When I paint, my object is to show what I have found. In art, intentions are not sufficient." Although quality, in particular, would appear an ideal objective, Gillett (1987) has observed that it "is difficult enough to define what is meant by quality of research, and even more difficult to measure it."

Of course, productivity may be raised by publishing in trivial journals, by taking co-authorship without contributing significantly to the research, by duplicating research material in separate journals (dual publication), or by striving for smallest publishable units in splitting one body of research into just viable component publications. Such realities suggest a further concern – that productivity and quality may not be related, and, if not, then any emphasis on productivity would be counter-productive if the *real* objective is to promote research excellence, a concern that will be explored in the analyses.

As the broad study design has been detailed elsewhere (Parker, 1986), only summary descriptions are given here of the research design and of the group studied. The initial objective was an audit, examining the published research of psychiatrists resident in Australia and New Zealand during a seven-year period, 1978–1984. It was decided, as a basic and minimum level of quality control, to consider only research reports published in journals listed in the Science Citation Index (SCI) or Social Science Citation Index (SSCI), which include some 4000 scientific journals. As decision rules about multi-authored papers are unclear, only first-author publications were considered, conceding the view or custom (see Parker, 1986) that "the first author is the one who actually did most of the work" (Burman, 1982), and that the extent to which co-authors of multi-author paper actually contributed to the research is unlikely to be validly assessed by any imposed formula.

## Method

Detailed literature searches, inquiries, and a questionnaire to likely regional researchers, followed by inspection of published papers or abstracts to ensure that a research component was evident, generated a list of 372 research publications produced by 89 psychiatrists. For each of these researchers a number of performance measures were derived, including (a) their 'number of publications' over the seven-year period, (b) a count of 'citations', and (c) a 'peer review' rating.

The second measure involved counting all citations (see Garfield, 1979) collected in the SCI or SSCI made to the particular researcher's work by authors other than the researcher himself over three consecutive years, 1982–1984, and thus effectively for work published before 1984. The third measure, 'peer review', was obtained by requesting ten senior researchers (seven from the Board of Research, Royal Australian & New Zealand College of Psychiatrists, and three on a committee of Australia's national council, the NH&MRC) to rate anonymously the quality of research for those named in a lengthy list of regional researchers. Specifically, each rater was requested to assign a score of 0–10 "in terms of their overall quality of research as judged by you", with '0' indicating "no quality or that you are unaware of that individual's research". Only five of the invited raters responded; as one of these responses was partially incomplete, 'peer review' ratings were derived by summing scores derived from only four raters. Although putatively a measure of quality, peer review judgements are likely to be influenced by productivity, and that limitation is immediately conceded.

A questionnaire was then sent to the 89 researchers isolated, of whom 68 (76%) responded. The questionnaire sought details on current affiliation, research career, research support and research satisfaction. As some details were known for non-respondents, the information collated on various items was 76–100%.

## Results

As reported previously (Parker, 1986), there was a male preponderance (89%), the mean age was 46 (range 30–74) years, and 41% were in full-time university positions and 7% in full-time research units. Scores on the performance measures were intercorrelated. Despite the low response rate in generating our 'peer review' variable, scores on this measure were significantly linked with 'citations' by others ($r=0.67$, $P<0.001$), supporting its likely validity as a measure of research quality; although, as noted earlier, to the extent that peer review judgements are influenced by productivity, an issue of circularity emerges. In support of this statement, it was established that a higher 'number of publications' was linked with a higher 'peer review' rating ($r=0.63$, $P<0.001$) and with a higher 'citations' count ($r=0.50$, $P<0.001$), quantifying moderately strong associations between productivity and quality.

In the earlier report (Parker, 1986), researchers were subdivided into 'highly', 'moderately' and 'minimally' productive subgroups (in relation to publications over the whole audit period 1978–1984), and compared on a number of variables (all listed in Table I). It was established that the more productive were more likely to have a higher research degree, to have been successful at obtaining a competitive research grant, to have received financial support for research from their institution, to have had research assistant support, to commit more hours each week to research, to be supervising higher degree students, and to have access to a statistician; but the groups could not be distinguished on several variables including age, age at first publication, and years since obtaining their psychiatric qualification. Such a cross-sectional research design disallows any judgement as to whether such factors are conducive to, or consequences of, a productive research career. In this paper the objectives were to synthesise key dimensions integral to researchers and to attempt some resolution of the antecedent/consequence interpretations, with the latter objective being addressed by subdividing the audit period into two periods.

To address the first objective, of synthesising key dimensions integral to a researcher, we undertook a principal components analysis, entering data on the 14 variables examined previously in univariate analyses (Parker, 1986). A fifteenth variable (publications in the early audit period, 1978–1981) was also entered. Several of the

TABLE I

*Items and derived factors in principal components analysis*

| *Item* | *Factor 1* *'Track record'* | *Factor 2* *'Experience'* | *Factor 3* *'Resource base'* | *Factor 4* |
|---|---|---|---|---|
| Number of publications, 1978–1981 | 0.81[1] | — | — | — |
| Non-self citations | 0.71[1] | 0.35 | — | — |
| Peer review rating | 0.82[1] | — | — | — |
| Possession of a higher degree | 0.49 | — | — | — |
| Age | — | 0.90[1] | — | — |
| Years as a researcher | — | 0.89[1] | — | — |
| Success with NH&MRC or MRC competitive grant | — | 0.51[1] | — | — |
| Success with competitive grant other than NH&MRC or MRC | 0.38 | — | — | — |
| Supervisor of higher degree students | 0.30 | 0.45 | 0.66[1] | — |
| Available monies for research | — | — | 0.79[1] | — |
| Access to statistician | — | — | 0.79[1] | — |
| Full-time university status | 0.39 | 0.38 | 0.51[1] | — |
| More hours spent on research | 0.46 | — | 0.49 | 0.30 |
| Research assistant available | — | — | — | −0.81 |
| Writing-up of research satisfying and gratifying | — | — | — | 0.63 |
| Variance | 33.6% | 12.0% | 9.9% | 7.3% |

1. Variables used to derive composite variables for the second predictive analysis.

variables (listed in Table I) require a brief description at this point. 'Possession of a higher degree' refers to a higher research (MD or PhD) and not a post-graduate psychiatric qualification. The NH&MRC (Australia) and the MRC (New Zealand) are the region's major competitive grants bodies for medical research (including psychiatry), so that the 'success with competitive grant' items were categorical variables examining whether the researcher was successful in obtaining such or other grants.

In the principal components analysis a varimax rotation was imposed and the factor matrix inspected. The first four factors had eigenvalues of more than 1.0 and accounted for a considerable proportion (62.8%) of the total variance. Table I records the factor coefficients in excess of 0.30. The first factor is labelled 'track record', as the highest-loading variables are number of publications, number of citations, and the peer review rating. The second factor is less easy to label and is tentatively termed an 'experience' factor, being contributed to most strongly by higher age and more years as a researcher, and additionally by success with NH&MRC and MRC grants, and by having supervised higher degree students. The third factor is also tentatively labelled (as a 'resource base' factor), being contributed to by availability both of research monies and statistical assistance, by supervision of (and therefore having) higher degree students, and by a greater investment of time in research. University affiliation loads on all these three factors and thus was not a strongly discriminating variable. The fourth factor has few contributing items and is therefore ignored in subsequent analyses and considerations.

The extent to which our refined sets of variables might predict productivity over the later part of the audit period, 1982–1984, was then examined. Factor scores were derived for each of the three factors and used as predictor variables in a set of multiple regression analyses. The 'track record' score was the only significant predictor ($F = 16.7$, $P < 0.001$; variance = 20.5%) of higher productivity. 'Resource base' scores were non-significantly associated ($F = 3.6$, $P < 0.06$; variance = 4.4%), while 'experience' scores were not linked at all ($F = 0.01$; variance = 0%) with higher productivity. When all three predictor sets were entered, the overall equation remained significant ($F = 6.75$, $P < .001$).

As a second strategy, new variables were derived for the first three factors, summing standardised scores on the three or four items that loaded most highly on each factor. Thus a composite 'track record' score was derived from number of publications 1978–1981, citations, and peer review rating score, and 'experience' and 'research base' scores were derived in a similar way. When those variables were entered freely in another regression analysis, the 'track record' composite score was the only significant predictor ($F = 18.51$, $P < 0.001$; variance = 22.7%) of publications in the 1982–1984 period, while the 'experience' ($F = 1.16$) and 'research base' ($F = 1.48$) variables were non-significant predictors. Finer examination of the three 'track record' variables showed that each alone was a significant predictor of more publications in the 1982–1984 period, the correlation being 0.38 for publications in 1978–1981, 0.33 for citations and 0.50 for peer review ratings.

## Discussion

The first objective of synthesising key dimensions defining characteristics of researchers was addressed by undertaking a principal components analysis, although, as a consequence of selection of variables, the generated dimensions were necessarily limited to career and work-related factors.

The present study should clearly be regarded as a pilot study because of the methodological limitations. While a longitudinal component was contrived, the study was principally cross-sectional. While the track record variables predicted productivity, each alone has methodological and intrinsic limitations (Parker, 1986). The peer review variable, for instance, requested very broad judgements, its scoring may have allowed some ambiguities, and the low response rate by the peers is conceded. There is an additional problem in seeking such ratings, in that raters of science (and presumably of scientists) tend to rate as much along a benign–critical dimension (as a consequence of personality style) as they do in response to the actual stimulus, so that it would be preferable to seek the judgements of a number of peers rather than a few. Citation counts can also be biased by a number of factors (see Parker, 1986). Additionally, as any momentum to productivity is likely to be slow to establish or disestablish, the association between productivity at two time periods was optimised by examining two adjoining time intervals. Theoretically, productivity might be expected to fluctuate, although the few empirical inquiries (e.g. Diamond, 1984) have in fact suggested a high level of constancy over time. Certainly, the utility of earlier research productivity as a predictor has been suggested previously, with Over (1982) establishing it as the key predictor of productivity a decade later.

Despite such methodological limitations, the results suggest an important finding for assessing the potential research productivity of a psychiatrist – that productivity is capable of being predicted on the basis of a number of track record variables, and that after these variables are taken into account, any predictive capacity provided by research experience and institutional support appears non-existent. That is, of course, not to say that the latter variables do not contribute to productivity, but rather that 'track record' variables are likely to be higher-order ones effectively capturing any influence of the other dimensions on productivity. If 'new' researchers and those who became inactive during the audit period had been excluded, it is likely that productivity would have been strengthened even more as a predictor. The results are consistent with those of an English study (Russell, 1967) which concluded that there "was no ready way to identify doctors who showed promise in research" other than that those who were active in generating 'research output' before enrolling in a post-graduate programme continued to have a high output after obtaining the diploma.

The findings provide empirical support for some traditional ways in which researchers are generally assessed by grant-giving and promotional committees. Most committees seek a 'peer review' judgement, although the extent to which the applicant or the committee selects referees or raters is likely to influence the validity of such judgments. While neither our 'experience' or 'resource base' dimensions predicted productivity, the lists of contributing variables were rather limited. It is likely that there are a number of important personality variables that are associated with greater productivity, and might be generated by ethnographic studies of productive and non-productive researchers. The present omission of personality/motivational variables was deliberate (as studies of this type risk being judged as intrusive), but generation of such dimensions is likely to be useful and to enrich this interesting field of research.

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# Involuntary Movements Associated with Mianserin Treatment

## A Case Report

KOICHI OTANI, SUNAO KANEKO, YUTAKA FUKUSHIMA and SHUJI KUBOTA

A case showing various involuntary movements during mianserin treatment and after a withdrawal of mianserin is described. This is the first case report of mianserin-induced involuntary movements. The report suggests that these symptoms can occur with a therapeutic dose of mianserin in certain susceptible patients.

Antidepressants, compared with neuroleptics, rarely cause involuntary movements, and only a few case reports are available in the literature regarding these side effects (Yassa *et al*, 1987). Mianserin is now widely used for the treatment of depression. To the best of our knowledge, there has been no case report of involuntary movements induced by mianserin. This report describes a case in which various involuntary movements were observed during mianserin treatment and after its withdrawal.

### Case report

The patient was a 30-year-old mentally retarded woman. Her IQ was 30 by the Suzuki–Binet test, which is a Japanese version of the Binet test. She had never presented psychotic symptoms and had never received neuroleptics. In November 1984, the staff of a facility where she had been in care for ten years consulted us because of her depressive symptoms. She had been low and looking sad for the last two months. She also had sleep disturbance and appetite loss. The depressive symptoms did not satisfy the criteria for major depressive episode, and she was diagnosed as suffering from atypical depression by DSM–III . The patient's history could not specify the cause of mental retardation. Neurological examination and blood and urine analyses revealed no abnormal finding. Bromazepam (2 mg *t.i.d.*) and estazolam (1 mg at bedtime) improved the depressive symptoms and this medication was continued for prophylactic reasons.

In July 1985, however, she became depressed again and the medication was switched to amitriptyline (10 mg) and bromazepam (3 mg *b.i.d.*), which controlled her depression for the next 22 months.

In May 1987, the medication was changed again to 20 mg of mianserin at bedtime because of her depressive symptoms. A week later, the dose was increased to 30 mg and this dose was maintained. One week after the increase of dose, her depressive symptoms improved: however, she was noticed puckering her lips when trying to speak. After two weeks of treatment with 30 mg of mianserin, the lip-puckering was more pronounced, and continuous chewing movements were also observed. In addition to these symptoms, she showed torticollis turning to the right side and deviations of her eyes and lips to the right side. Oral dyskinesia deteriorated when she was anxious or trying to speak. No tremor or muscular rigidity was observed.

The mianserin treatment was continued in spite of the oral dyskinesia and torticollis, as her response to the treatment was favourable. By the eighth week of mianserin treatment her depressive symptoms had disappeared. At this time, the plasma levels of mianserin and desmethylmianserin 15 hours after the bedtime dose were determined: they were 58 nmol/l and 56 nmol/l respectively. Then, mianserin was discontinued and treatment was switched to bromazepam 3 mg *b.i.d.*

Three days after the withdrawal of mianserin, the torticollis was not observed and the oral dyskinesia was slightly improved. Choreo-athetoid movements of the right hand, however, were observed. Even ten days after the withdrawal of mianserin, the oral dyskinesia and the choreo-athetoid movements of the right hand were still observed, and with the same magnitude as before. It took six weeks from the withdrawal of mianserin for these involuntary movements to disappear completely.

In February 1988, skull X-ray and computer tomography examinations were performed. No abnormal finding could be found by these examinations.

### Discussion

The causal relationship between the involuntary movements and the mianserin treatment of the present case is clear. The oral dyskinesia and the torticollis appeared from the second week of the mianserin treatment, whereas the choreo-athetoid movements of the right hand appeared as a withdrawal dyskinesia. These dyskinesias had disappeared by the sixth week after mianserin withdrawal.

In general, dopamine hyperactivity and/or cholinergic hypoactivity in basal ganglia is considered to be a possible underlying mechanism for involuntary movements (Yahr, 1979), and post-synaptic dopamine supersensitivity is hypothesised as the cause of neuroleptic-induced tardive dyskinesia (Baldessarini, 1985). However, Jeste *et al* (1984) reported elevated cerebrospinal fluid noradrenaline levels in neuroleptic-induced tardive dyskinesia and supported the hypothesis of noradrenergic hyperactivity rather than post-synaptic dopamine supersensitivity in tardive dyskinesia. Mianserin has little or no antagonism of dopaminergic and muscarinic receptors

(Richelson & Nelson, 1984), and its potency to inhibit dopamine uptake is weak (Randrup & Braestrup, 1977). These pharmacological properties of mianserin indicate that mianserin has little effect on the dopaminergic or cholinergic neuronal systems.

It is noteworthy that the present case had been treated with amitriptyline until the introduction of mianserin. Amitriptyline is reported to cause dyskinesias (Yassa *et al*, 1987), probably because of strong anticholinergic activity (Richelson & Nelson, 1984). The amitriptyline dose of the present case was small; however, it has been reported that there is a great inter-individual variation in the metabolism of amitriptyline (Mellstrom *et al*, 1986). Thus, the amitriptyline treatment might have produced a hypocholinergic state which was not strong enough to cause a dyskinesia. And it is possible that even a slight hyperdopaminergic state and/or a hypocholinergic state produced by mianserin coupled with the pre-existing hypocholinergic state produced by amitriptyline induced the various involuntary movements observed in the present case. Another possibility is that the augmentation of noradrenergic activity by $\alpha 2$ adrenergic receptor blockade of mianserin (Richelson & Nelson, 1984), which is in general considered to be the mechanism of the therapeutic effect of mianserin, was associated with the occurrence of the dyskinesias, provided that the hypothesis of Jeste *et al* (1984) is the case. Mianserin-induced involuntary movements may be rare. Our case report, however, suggests that mianserin can induce these symptoms even at a therapeutic dose in certain susceptible patients, such as cases previously treated with amitriptyline.

### Acknowledgement

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# Lithium in Pregnancy and Still Birth:
## A Case Report

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Although initially considered safe for the foetus, lithium has been shown to have teratogenic effects if used during the first trimester of pregnancy. Its use is also associated with a higher than expected frequency of still births and perinatal deaths. Our patient, in whom lithium prophylaxis was considered essential for clinical and social reasons, continued to take lithium without medical supervision throughout her pregnancy and had a still birth. We suggest avoiding the use of lithium at least during the first trimester of pregnancy.

Since the discovery of the thalidomide disaster in 1961, there has been an increased concern and interest regarding the use of drugs in pregnancy and their resultant effects on the growing foetus. As many psychiatric disorders need long-term treatment with drugs, a number of women are exposed to drugs during their fertile period, and some of them continue to take psychotropic drugs even during pregnancy. While there are no conclusive data to unequivocally document teratogenic effects of psychotropic drugs, there are reports of higher drug consumption by mothers of malformed children, and stray reports of congenital defects in children born to mothers taking phenothiazines (VanBlerk *et al*, 1980), and possible teratogenic effects of imipramine (Idänpään-Heikkilä & Saxen, 1973).

Lately there have been a number of reports linking the use of lithium in pregnancy with many congenital defects and neonatal deaths (Schou *et al*, 1973; Weinstein & Goldfield, 1975; Källén & Tandberg, 1983; Linden & Rich, 1983). These reports have obtained data from lithium registries. These and other reports have highlighted a greater than expected frequency of congenital cardiac malformations such as Ebstein's anomaly, coarctation of aorta, patent ductus arteriorus, valvular atresias, single umbilical artery etc. Schou *et al* (1973) and Weinstein & Goldfield (1975) have also reported cases of still birth from the lithium registries.

As the prophylactic value of lithium is well established, a large number of patients, including women of child-bearing age, are being given the benefit of long-term lithium use. In view of the evidence cited above, it becomes important to record any abnormal change that is noticed while drugs are used during pregnancy. With that aim, we wish to report a patient who received lithium alone throughout the period of pregnancy and subsequently gave birth to a stillborn baby.

## Case report

P, a 23-year-old married female, who did not smoke or drink, and came from an urban joint family of upper middle socioeconomic status, was admitted to the psychiatry ward of the All India Institute of Medical Sciences, New Dehli for management of severe manic excitement. She had no family history of mental illness but had had two such episodes of excitement in the previous five years, lasting 3–4 months each time but treated elsewhere. She recovered completely each time. In the ward she responded quite well to neuroleptic medication. This was her first episode since her marriage ten months ago. Her husband and parents in-law were very perturbed about her having mental illness as this was not disclosed to them by the girl's family before the marriage took place. Although the husband agreed not to dissolve the marriage, it appeared that any attack of mental illness in future would jeopardise it. With this in mind, she was advised long-term lithium prophylaxis, and in the ward was put on lithium carbonate, 1200 mg per day (serum level 0.6 mmol/l). She was advised to come regularly for follow-up and to discontinue lithium if she became pregnant.

The patient lived more than 200 km from our treatment facility, and when she came to us for a follow-up one year later, she was already six months pregnant and had continued lithium throughout this period. General physical and gynaecological examination at this stage revealed no lithium- or pregnancy-related complications and an ultrasonographic scanning of the foetus showed no apparent evidence of any congenital anomaly. Since the pregnancy was well advanced, the patient was advised to continue her pregnancy and to continue lithium under regular supervision. However, the patient neither visited a psychiatric facility nor had proper antenatal check-ups.

On completion of eight months of pregnancy, the patient went into labour and had a still birth at a private nursing home in her own town. The foetus was described as emaciated and macerated and already dead for nearly ten days, but no autopsy was done. Throughout the pregnancy, the patient had not used any drug other than lithium; she also had no history of any ante-partum haemorrhage or exanthematous fever. Soon after delivery, her lithium was stopped by the attending gynaecologist and within a week of that she had a relapse of manic excitement.

## Discussion

Gross congenital anomalies are found in 2–4% of all infants (VanBlerk *et al*, 1980), out of which 5–10% could be because of teratogens (Howard & Hill, 1979). Lithium has been implicated as a teratogen in many studies. Szabo (1970) reported a high incidence of cleft palate, external ear and eye defects, and foetal deaths when lithium was administered to pregnant rats and mice. However, some other studies did not find lithium to be teratogenic in animals (Johansen & Ulrich, 1969; Gralla & McIlhenny, 1972).

One of the earlier studies from the lithium register was that by Schou *et al* (1973) of 118 children born to mothers who had received lithium during the first trimester. Out of 118 births, five were stillborn and seven died within a week. Six of these were malformed. There were three other malformed babies who survived. The malformed babies usually had severe cardiac defects. The authors concluded that the data did not answer the question of whether or not lithium was teratogenic in man, since the risk appeared much less than what one might expect from animal studies.

Interestingly, two authors from the above study, Weinstein & Goldfield (1975), in another study from the lithium registry, found 13 cases of malformation in 143 births and a higher ratio of severe cardiovascular anomalies than expected in the lithium babies, and cautioned about the teratogenic effects of lithium. However, they mentioned that the abnormal babies were more assiduously reported than the normal babies.

By record linkage of a discharge diagnosis registry and a medical birth registry, Källén & Tandberg (1983) identified 350 women with manic-depressive disease who had borne a child. The total delivery outcome was poorer than expected, with a high perinatal death rate and a high malformation rate among infants born of women who had used drugs in early pregnancy, and this phenomenon was concentrated in women who had used lithium.

Schou & Weinstein (quoted by Linden & Rich, 1983) collected 217 cases in which the mother had taken lithium during at least the first trimester of pregnancy. Of these, 183 babies were apparently normal at birth, 7 were stillborn, 2 had trisomy 21 (both mothers were in their late 30s) and 25 (11.5%) were malformed. Of the 25 malformed babies, 18 had anomalies of the cardiovascular system. Unlike their earlier stand (Schou *et al*, 1973), the conclusion of the lithium register workers was that lithium is likely to be teratogenic with respect to the cardiovascular system, and they suggested that lithium should not be used during the first trimester of pregnancy unless considered clinically essential.

In our patient, who did not have any past or present medical or gynaecological disorder, the still birth appears to be directly related to lithium intake during pregnancy. It is estimated that 70% of affective disorder patients will relapse within a year of discontinuing lithium, compared with 20% of those who are maintained on lithium (Linden & Rich, 1983). Our patient remained well while on lithium and relapsed soon after lithium was stopped. Some female patients will require the benefit of lithium without a break. Patients must be informed of the likely teratogenic risks of lithium, and its use must be avoided if possible at least during the first trimester of pregnancy.

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# Suspected SSPE – a Delayed Psychiatric Presentation

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A case of suspected subacute sclerosing panencephalitis is described, presenting to a psychiatric hospital 39 years after a natural measles infection.

Subacute sclerosing panencephalitis (SSPE) is a very rare disease affecting 0.2 per million of the UK population (Kipps *et al*, 1983). It is a form of measles encephalitis with an average incubation period of seven years (ranging nine months to 18 years) from the measles infection (Bellman & Dick, 1980). The disorder largely affects children and adolescents, and is characterised by an insidious onset of mental deterioration, and later motor dysfunction, proceeding to coma and death, usually within a couple of years.

A greatly elevated titre of measles antibody may be discovered in the serum and cerebrospinal fluid, and characteristic electroencephalographic abnormalities consist of periodic complexes of high voltage occurring very regularly in each individual tracing (Wulff, 1982). Histological lesions may be widespread and variable, including perivascular small vessel cuffing by lymphocytes and plasma cells, proliferation of microglial cells and astrocytes, and intranuclear and intracytoplasmic inclusion bodies. In this report a middle-aged woman presents with a suspected functional psychiatric disorder.

## Case report

Mrs E. G., a 44-year-old English woman, was admitted via a casualty department to St Mary's Hospital, Stennington, in an agitated, unkempt state (smeared with faeces), having collapsed in a shopping centre. She was feeling miserable, had not eaten for several days, and was incontinent of urine. She was fully conscious, orientated in person only, with very poor recent memory and a rather flat affect. Her behaviour was disinhibited and her emotions labile and often inappropriate. She had always been very dependent upon her husband (whom she claimed was still alive), and since his death seven years earlier (aged 63) she had neglected herself, her home and her family – four of her five children subsequently being taken into care. Psychiatric opinion (1982) was of an inadequate personality or schizophrenic defect state, while a psychologist reported her to be of normal intelligence and ability.

Her previous personal history was unremarkable, and her medical history limited to measles when five years old, and a tubal tie. She had no previous psychiatric history, although her mother had required hospital admission for a manic illness some years earlier. She did not drink alcohol and took no medication. She was pale and thin, with finger sclerodactyly and erythema ab igne. There were occasional semi-purposive movements of her upper limbs, and bizarre speech, which while normal in articulation, was monosyllabic and repetitious. She had a broad-based unsteady gait (tending to rock backwards) with Rombergism. There was increased tone in all limbs with full power, and pathologically brisk reflexes throughout, with bilateral extensor plantar responses and sustained bilateral ankle clonus. Routine blood tests and radiology were normal and she was transferred to the Royal Victoria Infirmary, Newcastle upon Tyne, for further investigation. Electroencephalographic recording showed a normal record of low potential, and a week later "moderate slowing of background rhythm together with some intermittent delta activity most evident in the right superior frontal region", suggesting a rather diffuse disturbance of cortical function. Autoantibodies and serum electrophoresis were normal, and CT scan showed cerebral atrophy only. Cerebrospinal fluid findings were 1 WBC/ml, total protein 0.46 g/l (with normal gammaglobulin subfraction), glucose 0.43 mmol/l, VDRL negative; viral screening revealed a 1/8 measles titre with a parallel blood titre of 1/320. Her agitation increased and incontinence persisted and she was transferred back to St Mary's heavily sedated and catheterised – an *E. coli* urinary tract infection persisted owing to multiple antibiotic allergies. Her condition gradually deteriorated, with frequent falls and subsequent confinement to bed. She was able to say her name and obey simple first order commands only, and she slept for much of the time. Physical examination remained unchanged, but she suffered a gastrointestinal bleed, manifest by a 4 g/dl drop in her haemoglobin, and positive occult blood stool tests. This proved to be self-limiting and was treated conservatively. One month later, nine weeks after her admission, she died.

## Discussion

During the course of chronic encephalitidies, behavioural symptoms suggestive of functional psychiatric disorders are often observed. This lady was felt to be depressed when seen in casualty; the differential diagnoses widened on admission to include schizophrenic defect state, Korsakov's psychosis, and later Huntington's chorea and normal pressure hydrocephalus. Himmelhoch *et al* (1970) report eight adults with SSPE, all of whom displayed symptoms characteristic of functional psychiatric disorder, and seven of whom were originally diagnosed as suffering from depression, schizophrenia or hysteria. When the data were published (14 years after the first case presented), three patients had died, but five were still living, and three had enjoyed long periods of return to normal intellectual functioning. Could this lady have suffered a seven-year encephalitic illness after a 32-year latent period?

The diagnosis of SSPE is based on the clinical history, raised measles antibodies in serum and cerebrospinal fluid, electroencephalographic findings and brain histology. All the new cases reported to the UK register between 1977 and 1979 satisfied the first two criteria, "upon which a confident diagnosis can be made" (Bellman & Dick, 1980). Among the 47 cases, 39 showed at least one characteristic electroencephalogram: this lady did not, but she suffered a chronic urinary tract infection, and the disappearance of complexes might be explained by a rise in body temperature due to a febrile illness (Wulff, 1982). Brain histology was carried out in none of the above cases, while in this case it revealed discrete granular plaque lesions in the periventricular white matter of the occipital and parietal lobes. These showed myelin breakdown, with foamy macrophages and astrocytic gliosis. There was mild focal perivascular cuffing with mononuclear cells (predominantly plasma cells). No inclusion bodies were seen, and while the above appearances are consistent with SSPE, many of the features would also be consistent with multiple sclerosis during active demyelination. In view of the atypical nature of this case, acute multiple sclerosis must therefore be considered as a differential diagnosis.

## Addendum

Following the examination of additional material, it was noted that the cerebral cortex was not involved. The lesions in the periventricular white matter showed a predominance of focal demyelination with gliosis and inflammatory cell infiltration. The vessels within the lesions showed concentric fibrosis. Virus inclusion bodies were not identified and measles virus antigen was not demonstrated.

These findings are typical of acute demyelination in multiple sclerosis. In the absence of evidence of panencephalitis and with a predominance of demyelination over both neuronal degeneration and gliosis, this diagnosis must therefore be favoured.

This report typifies the dilemma that can arise with a psychiatric presentation of an atypical neurological illness, and illustrates the need (for statistical if not therapeutic reasons) to follow all available diagnostic pathways.

## Acknowledgements

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Editor: Ian Pullen

**Contents:** Molecular genetics and human disease/ Non-psychotic psychiatric disorder after childbirth/ 'Biological' treatment/Journal supplements/Prevalence of dementia/History of depressive disorder/ Supportive analytical psychotherapy/Ethnic density and schizophrenia/Treatment of suicidal manic depression/Chronic depression/Failure to convulse with ECT/'Good old days' of psychiatry

## Molecular Genetics and Human Disease

Sir: I would like to follow Dr Pelosi's lead (*Journal*, October 1988, **153**, 570) in breaking the deafening silence surrounding the ethical implications of the new genetics. Psychiatry stands on the threshold of its most exciting era. The chance to increase understanding of our most devastating mental disorders and perhaps to develop new treatments is open to us. This exists alongside possibilities for serious misuses by clinicians with the most laudable of motives, who may be tempted to step beyond their duty to relieve the suffering of the individual into the realm of attempting to alter the composition of society by applying eugenic principles. When scientists in the first half of the century discovered atomic energy many were immediately aware of its potential for both good and ill. Molecular genetic technology is no less awesome, and it behoves our profession to use some foresight in considering *its* potential.

Dr Pelosi raises Huntington's disease as a case in point: a condition whose gene acts with ruthless inevitability quite unlike the gene or genes underlying commoner psychiatric disorders. Those ethical dilemmas which may arise in relation to the latter will be magnified and even more complicated. Open debate on this topic is therefore mandatory. Furthermore, we should not make the mistake of equating the diagnostic clarity promised by genetic research with moral certainty. Aubrey Lewis, the most influential British psychiatrist of recent times, was himself rather sympathetic to the eugenic movement. He argued: "Not only eugenists but all compassionate and reflective people must surely be concerned at an increase in the number of children born to parents who are themselves affected by a prolonged mental illness or who are destined to become mentally ill." (Lewis, 1958). In summary, he warned: "We do not know enough to warrant our making firm predictions or advocating celibacy and childlessness to outwardly healthy people who seem predisposed to mental illness."

We may soon know enough to make much firmer predictions than was hitherto imaginable. History will judge if we use this knowledge wisely.

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## Non-Psychotic Psychiatric Disorder After Childbirth

Sir: Cooper *et al* (*Journal*, June 1988, **152**, 799–806) are to be congratulated on their careful controlled study of the prevalence of non-psychotic psychiatric disorder during the first year after childbirth. However, the finding that the prevalence in the Oxford mothers was not greater than in the Edinburgh controls is not in conflict with my own study (Pitt, 1968) to which they refer; I was not looking at prevalence, but incidence.

I had assumed that many women's mental health might actually benefit from the acquisition of a wanted or not unwelcome baby, and that those who responded adversely would be a minority. Indeed, there was a small but significant drop in scores on my questionnaire for symptoms of anxiety and depression at the time of childbearing between the third/fourth months of pregnancy and the puerperium. However, 10.8% at least (Neugebauer (1983) calculated that this was an almost 50% underestimate!) developed within two months of giving birth a state of depression (most often, I found, conforming to the 'neurotic' pattern – I rather regret having used the alternative term 'atypical') unusual for them, disabling, and thoroughly unwelcome. I thought that this incidence was unexpectedly high, and the findings of Dr Cooper *et al* confirm this.

The overall incidence of psychiatric disorder in their study was 151/1000 in the post-natal year, which is only 14% higher than in a rather unsatisfactory Edinburgh control group aged 18–65 (not many women give birth after 50). However, as the authors concede, "there was a tendency for the onset of psychiatric disorder to arise in the first 3 months after delivery rather than evenly throughout the postpartum year". Indeed there was: 24% of the incidence was within a month of childbirth, 40% within 3 months and only 27% in the last 6 months of the post-natal year.

On the evidence presented it would be premature to write the obituary of post-natal depression.

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PITT, B. (1968) "Atypical" depression following childbirth. *British Journal of Psychiatry*, **114**, 1325–1335.

SIR: Without doubt the study by Cooper *et al* (*Journal*, June 1988, **152**, 799–806) is one of the most thorough into the vexed question as to whether childbirth contributes to a genuine increase in non-psychotic morbidity. The results in fact showed no significant difference between the level of such morbidity in a group of puerperal women and that in a non-puerperal control group. The controls were not studied directly by the authors but were a subset of a general population sample of women studied by Surtees *et al* (1983) in Edinburgh. They were non-puerperal in that they had had no pregnancy or delivery during the previous year. The problem with this control group is that it may have contained women in their second or even third postnatal year still suffering from disorders which had had a postnatal onset.

The authors themselves acknowledge that such disorders may pursue a chronic course, and they refer to Pitt (1968), who found that 3.9% of his total sample of 305 women had depressive disorders which showed little or no improvement a year after initial assessment. Of particular relevance for an Edinburgh population is the finding reported by Wrate *et al* (1985) of a 3-year follow-up study of 103 mothers. Of 11 with postnatal depression, 7 (6.8% of the total sample) had disorders which lasted at least until the end of the first postnatal year and 2 mothers had disorders lasting for more than two years. Furthermore, Dr Cooper *et al* show that about one-third of their own puerperal cases are detectable at twelve months postpartum, and they presumably remained cases for at least part of the second postpartum year.

In clinical practice one certainly does see women in the second or, to a lesser extent, third year postpartum with non-psychotic disorders which have pursued a chronic persistent or relapsing course since delivery. Such women should be excluded from the control group in order to derive a better estimate of the psychiatric morbidity among the general female population of childbearing age; one which is independent of the effect of childbirth, although not independent of the effect of the stresses of childcare, and hence suitable for use as a control value.

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## 'Biological' Treatment

SIR: In his letter (*Journal*, September 1988, **153**, 405) commenting on my use of the word 'biological' in my article (*Journal*, May 1988, **152**, 657–659) on the prediction of response of depressed patients to treatment, Dr Van Kempen asks the question, "why not 'drug' or 'pharmacological' treatment?" The answer is to be found in the first paragraph on page 659, where it is indicated that 23 patients received ECT either alone or in combination with drugs. Perhaps I could have used the word 'physical' to cover this combination of treatments, but in considering the aetiology and treatment of psychiatric disorders it is accepted practice to categorise the factors as psychological, social, and biological.

On the broader issue of the meaning of the word 'biological', I take the point that it is generally held to imply a relation to the science of life in general, but the *Shorter Oxford English Dictionary* (3rd edition, 1973) gives two meanings: (a) "the study of human life and character", which is indicated as obsolete, and (b) "the science of *physical* (my italics) life, dealing with organised beings or animals and plants, their morphology, physiology, origin and distribution".

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### Journal Supplements

SIR: I must register most strongly my objections to your recent Supplement *Progress in Antidepressant Therapy* (*Journal*, September 1988, **153**). I was initially delighted that another supplement had arrived, especially with such a title – suggesting a review of recent trends in psychopharmacology. It was thus with dismay that I found that it was merely a prolonged advertisement for fluoxitene – presumably manufactured by Eli Lilly & Co., as a quarter of the contributors worked for that company.

While I do not doubt that this new drug will prove to be an effective (and expensive) antidepressant, it seems inappropriate that the launch of a new product should be given such official sanction as its own supplement in the *Journal* – especially as it shares its properties with more established drugs already on the market, most notably fluvoxamine (but also clomipramine and trazodone).

If the *Journal* continues to publish the proceedings of symposia, which I trust it will, I hope they will report those meetings that are not so actively involved in the marketing of a particular product, but rather the collection together of informed professionals. I am sure that Eli Lilly & Co. can afford to produce their own glossy advertising without the help of the *Journal* and thereby the tacit endorsement of the Royal College of Psychiatrists.

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The allegation that the *Journal*'s Supplement No. 3 is a "prolonged advertisement" for a particular product is untrue. This supplement is characterised, in fact, by carrying no advertising of any kind. It consists wholly of scientific information, much of it from outstanding scientific workers, which was peer-reviewed in accordance with the *Journal*'s usual standards. The fact that a number of papers refer to a particular drug does not alter this situation. In the same way, the *Archives of General Psychiatry* recently published five papers in one issue and two in a subsequent issue all referring to a particular drug without, so far as I am aware, its integrity being challenged.

The publication of this supplement followed the requirements laid down by the College's Council, and conformed to the highest ethical standards; the content of all three supplements so far published has been fully endorsed by the Journal Committee. Of the Journal's 12 000 subscribers (and considerably more readers), three have so far expressed disapproval of this particular supplement: none have been able to point to any fault in the content of any of the papers contained in it. If, as Dr Jelley suggests, the papers indicate that fluoxetine is the same in its properties as other drugs, that would be a rather peculiar form of 'advertising'.

This supplement does not in any way, directly or indirectly, offer "official sanction" or "tacit endorsement" to fluoxetine or any other drug; nor will any future issue do so. It is quite possible, however, that future supplements may contain more than one paper relating to a particular drug, provided that those papers are of appropriate scientific quality and conform to the *Journal*'s normal requirements.

HUGH FREEMAN

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### Prevalence of Dementia

SIR: Ineichen (*Journal*, 1987, **150**, 193–200) proposes that most of the reported prevalence rates of dementia in the elderly are too high, and in particular that the Newcastle rates are too high (Kay *et al*, 1964, 1970). However, the rate cited for the overall prevalence of dementia by Kay *et al* (1970) is shown as 8.8% (Table I of Dr Ineichen's paper), although the correct figure as given in the text is 6.2%. This is almost exactly the median of the rates arranged in order of magnitude in this Table. The Newcastle rate of 6.2% for age 65+ included cases which although mild (as opposed to severe) were regarded as definite.

Table II of Dr Ineichen's paper shows the rates reported for *severe* and *severe+moderate* dementia where authors make this distinction. The Newcastle rate is shown as 6.2% for severe dementia, but was actually 4.9% in the study cited (Kay *et al*, 1964). Moderate dementia was not distinguished but some cases which other authors might call moderate may have been rated as mild.

Dr Ineichen suggests that three recent UK studies which obtained low prevalence rates (mean = 2.9%) are to be preferred to earlier studies. However, the data cited in his paper do not appear to support this view. Of the seven studies with rates of severe dementia below 3% (Table II) (eleven others show rates ⩾3%) three refer only to people in their 70th year, an age when dementia is uncommon. In two studies, when the authors' rates of severe and moderate dementia are added together, the rates increase to 5.3% and 7.7%, the latter being higher than any other rate in the Table. In the study by Maule *et al* (1984) the rate of severe + moderate dementia is only 2.9%, but the *overall* rate is 8.6%, which is higher than the overall Newcastle rate of 6.2%.

This leaves only the London–New York cross-national study of Gurland *et al* (1983), in which the London rate of 2.5% compares with the New York rate of 5.8%, a striking difference for which there is no ready explanation; but as the authors point out, replication is needed. Finally, in the overall prevalence Table, the Melton Mowbray survey rate of 4.5% in a population aged 75+ is lower than expected (Clarke *et al,* 1986), but is based on one brief questionnaire.

There seems to be no good reason to think that dementia among the elderly at home is appreciably rarer than the Newcastle rates of 5–6%; in Newcastle, institutions added less than 1% to the rate, but the ratio of cases at home and in institutions will vary. In Finland, for instance, *severe* dementia is found in 3.8% of people aged 65+ at home and in 6.7% when institutions are included (Sulkava *et al,* 1985). The problem is that in the community the range of cognitive impairment is wide and degrees of severity are not yet adequately defined.

In fact, Kay elsewhere (Kay, 1972) reported the Newcastle rates as 6.2% ('severe') and 2.6% ('mild'). This just goes to show the state of confusion the grading of dementia is in.

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## History of Depressive Disorder

SIR: The recent article by Berrios (*Journal,* September 1988, **153,** 298–304) suggests that depressive disorder became conceived as an emotional disorder in the 19th century. Not all the descriptions from that time would concur with this. Those of Griesinger (1867), Lewis (1889), and, a little later, Mendel (1908) suggest that a disturbance of energy may be the basis of the condition.

My own personal experience of the disorder over a period of 20 years and objective view of it during the past 10 years in general practice has led me to the conviction that depression is primarily a disorder of energy, both qualitative and quantitative, with mood changes being secondary. I favour the term dysenergia, which was used by Dioscorides in the 1st century AD, and which is no longer extant, to describe this.

In the early 20th century, when the term 'affective disorder' was gaining usage, caution was nevertheless exhibited by some writers. Craig (1912) observed that, "as with other disorders the mistake was made of naming the disease according to its most prominent symptom"; Bleuler (1923) wrote: "the disturbance of the affect represents merely the most conspicuous symptom of a general transformation of the psyche that cannot as yet be comprehended".

Over the past 40 years the idea that depression is a single system disorder of mood has become increasingly accepted. The biochemical evidence is conflicting, and I can find no phenomenological evidence to support it. I wonder if it is a long-standing assumption which needs examination.

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## Supportive Analytical Psychotherapy

SIR: Holmes (*Journal,* June 1988, **152,** 824–829) proposes a carefully planned admixture of dynamic and supportive therapy which I suspect could only be carried out by an extremely skilled and experienced practitioner. As he points out, supportive psychotherapy is most often carried out by the multidisciplinary team rather than specialist psychotherapists, and often there is no supervision or training available. An inexperienced therapist might be able to practice the distributive psychotherapy referred to by Holmes, that is, to spend a part of the session questioning and history-taking, and the rest in a more passive, listening and understanding mode. However, judging the niceties of when to draw attention to transference issues, or at what point to challenge instead of contain the patient, are no matters for a novice therapist, especially when faced with the type of patient thought to require supportive rather than dynamic therapy – in other words, the more damaged and vulnerable patient.

I suspect that Dr Holmes' own training and skills are not shared by the majority of those medical and non-medical practitioners of supportive psychotherapy who might well come to grief if they attempt to blend supportive and dynamic features in the way he suggests.

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### Ethnic Density and Schizophrenia

SIR: It is doubtful if 'ethnic density', as determined simply by population size within an area (especially one as large as a Regional Health Authority), can have any useful meaning. This measure used by Cochrane & Bal (*Journal*, September 1988, **153**, 363–366) may be taken less as a determinant of 'density' than as denoting the presence or absence of a particular community within the area. The daytime density of psychiatrists in Belgrave Square is high compared with Eaton Square, but this tells us little about the individual motivations and psychology of these particular individuals, or their patterns of settlement within the Square.

Minority groups are hardly free to 'diffuse' throughout an area for reasons purely associated with individual psychopathology, as contrasted with external constraints associated with a racially biased provision of housing and employment. The actual pattern of distribution within a smaller local area may be a more significant indicator of those demographic factors possibly associated with psychopathology, such as 'social drift', group cohesion, and community support, let alone nosocomial factors which we now suspect account for much of the differential 'pathology' between ethnic groups.

To take the case of Nottingham: the 'foreign-born' community has settled predominantly in the inner-city areas where it also has the highest rate of schizophrenia, arguing against the ethnic density hypothesis of Faris & Dunham (Giggs, 1986). While higher rates of schizophrenia for each group taken separately are found among European and South Asian migrants in the outer-city council estates than in 'inner-city, low status' areas, the highest rates among West Indians occur when they live in the 'inner-city, high status' areas. For each of the three groups, however, the highest rates of settlement are in the inner city. Thus the ethnic density hypothesis seems to fit Europeans and South Asian migrants, but not West Indians.

It is in the specific pattern of settlement within a particular area, with all its political, economic, and psychological constraints, that explanations of differential pathology and access to services can be found. While I am sure this was not the intention of the authors, the bald 'ethnic density' argument by itself comes perilously close to ethological and thus biological explanations (e.g. Esser & Deutsch, 1977).

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### Treatment of Suicidal Manic Depression

SIR: I read with great interest the paper by Schou & Weeke (*Journal*, September 1988, **153**, 324–327). In their guidelines for improving suicide prevention in manic depressive illness they state that "continuation or prophylactic treatment with antidepressants should presumably be carried out with full therapeutic dosage". They base this argument mainly on their finding that 13 patients who were treated prophylactically with sub-therapeutic doses of antidepressants committed suicide. However, 10 patients who received full therapeutic doses of antidepressants also committed suicide. In Modestin's (1985) study too, 21% of the patients had received full therapeutic dosage, compared with 26% who were on smaller doses of antidepressants, at the time of suicide. Although Myers & Neal (1976) found that only 5 out of 44 patients had been given antidepressants in optimal dosage at the time of the suicide, their optimal dose was based on the "manufacturers recommended full dose". Often this is less than the therapeutic full dose employed by clinicians, and therefore it is not possible to draw any definite conclusions from their results.

From these findings it is difficult to justify the authors' above recommendation. There is an urgent need for further long-term studies in unipolar depression to establish the adequate prophylactic dosage of antidepressants. Until such time as these are carried out, it seems reasonable to use 'subtherapeutic doses' for prophylaxis, just as we do with lithium in bipolar disorder and neuroleptics (depot medication) in schizophrenia.

Secondly, as the authors mention, it has been shown that the full prophylactic effect of lithium may not be achieved until after 6–12 months of treatment. If this is the case, how could one justify its use and continuation/prophylactic treatment of first choice in unipolar patients, since most patients are at risk of relapse in the first 6–12 months after recovery? For this reason I am inclined to agree with the recommendation made by Coppen *et al* (1978) that lithium prophylaxis should be used only in those unipolar patients who have had three or more attacks of depression.

As pointed out by Myers & Neal (1978), "the major difficulty in preventing suicide in psychiatric patients is to know when, in what may be a long illness, the danger periods occur". For example, in the above study the majority of suicides (28 patients) occurred during unfinished treatment with ECT or antidepressants. This suggests that the chances of suicide are greater when patients begin to recover from a severe depressive illness, and extra vigilance and care is necessary during this period. This is obviously of great importance when ECT is given to out-patients.

Again, most of the relapses are known to occur within the first 6 months of recovery after an illness. Hence careful, regular follow-up in a psychiatric clinic by an experienced psychiatrist, who knows the patient well, is as important as prophylactic drug treatment.

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## Chronic Depression

SIR: The article by Scott (*Journal*, September 1988, **153**, 287–297) provides an excellent review of chronic depression. However, I do feel that she fails to emphasise the major role that alcohol abuse is likely to play in both chronic and resistant depression. Alcohol abuse is extremely common, and a recent study (Glass & Jackson, 1988) found that in two psychiatric hospitals over a 12-year period a steady 9–11% of the total number of diagnoses was accounted for by alcoholism, with 30–40% of alcoholics receiving an additional diagnosis. Most doctors, including psychiatrists, are also extremely poor at detecting alcohol problems among their patients.

Heavy alcohol use and affective illness often coexist (Dorus *et al*, 1987), and it is common clinical experience that depression rarely resolves with treatment while the patient continues to drink.

Recent work has demonstrated that one possible mechanism for this effect is the ability of alcohol to prevent the β-adrenergic receptor down-regulation that occurs with chronic antidepressant treatment (Linnoila *et al*, 1988). As the regular amount of alcohol intake in a clinical population to produce this effect is not known, great care should be taken in establishing the drinking habits of any patient with a seemingly chronic or resistant depression.

Scott mentions that some studies have demonstrated particularly low serotonergic function in chronic depression compared with acute depression, and recent work (Badawy *et al*, 1988) indicates that alcohol may be potent in decreasing serotonergic activity. Interestingly, current research also suggests that the new, highly selective serotonin reuptake blockers may have a special role to play in chronic and resistant depression.

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## Failure to Convulse with ECT

Sir: The patient who fails to convulse when an electric stimulus is applied for electroconvulsive therapy (ECT) always causes concern. Sharpe & Andrew (*Journal*, January 1988, **152**, 134–136) recently described such a case and explored the possible explanations and remedies in detail. Although propafol was not used in the case described, I would like to draw attention to the effect this newly introduced induction agent has on seizure activity in ECT.

ECT was recently administered to a depressed 55-year-old male patient. The seizure duration was routinely timed, and it was observed that on two occasions this was reduced to 5 s instead of the usual 12–25 s (mean = 20 s). The intensity of the seizure was also noted to be correspondingly reduced. On both these occasions propafol had been used, as opposed to methohexitone, as the induction agent, while the doses of muscle relaxant, suxamethonium, were equivalent. Exploring this further, it appears that our anaesthetist colleagues are already aware of this phenomenon.

Propafol is a recently introduced induction agent which appears to have many advantages from an anaesthetic viewpoint, including fewer side-effects, painless administration, rapid induction and recovery, and a half-life of 1.8–8.3 min. However, Dwyer *et al* (1988) have shown in a study using patients as their own controls that propafol, compared with 1% methohexitone, reduces both observed seizure duration and duration of cerebral electrical seizure activity by an average of 25% ($P < 0.001$). They also found that it obviates the hypertensive response to ECT.

As propafol is becoming increasingly popular among anaesthetists, it is important that psychiatrists are aware of the curtailing effects it has on seizure activity. It is suggested that, until this phenomenon is explored further and propafol is shown not to reduce the therapeutic benefits, alternative anaesthetic agents are used for ECT. Propafol is easily identified as an opaque white emulsion, compared with the clear colourless solutions of methohexitone and thiopentone.

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Dwyer, R., McCaughey, W., Lavery, J., *et al* (1988) Comparison of propofol and methohexitone as anaesthetic agents for electroconvulsive therapy. *Anaesthesia*, 43, 459–462.

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Sir: It is with great interest that I read the letter of Pippard & Russell (*Journal*, May 1988, **152**, 712–713), regarding the paper by Sharpe & Andrew (*Journal*, January 1988, **152**, 134–136) which describes failure to convulse with ECT. Of particular interest are their assertions that "the patient resistance is unknown, but probably between 200 and 500 ohms", that the "last 4 ms of each semi-sine wave is largely ineffective because of falling potential", and finally that "owing to the rapid exponential fall of potential with this capacitor discharge type of apparatus [Transpsycon] the effective stimulus is limited to the first 0.5–0.75 s". They go on to suggest that the "use of a constant current stimulus largely compensates for variation in the patient resistance".

The new ElCoT MF-1000 ECT unit was designed with precisely these kinds of difficulty in mind. It is a microprocessor-based unit, which measures the patient's impedance continuously, once every cycle. Thus, for instance, with a brief-pulse stimulus of frequency 80 Hz, the unit measures the patient impedance 80 times per second, and readjusts the stimulus accordingly to deliver precisely the prescribed dosage. In this manner, the physician can be certain that, despite the well-documented impedance variability across patients, as well as for a given patient from day to day and even in the course of a single treatment session (Gangadhar *et al*, 1985), the stimulus delivered by the ECT unit will remain fixed.

Drs Pippard & Russell are correct in stating that "the optimum parameter levels for ECT are still uncertain". Indeed, it has been argued that the exact effects, if any, of each parameter are either unknown or, at best, ill understood. This need not be so, however. No other medical treatment is administered "blindly", to use the term of Drs Pippard & Russell, and it would appear that remaining uncertainties in ECT are due more to the inability to fully control dosage because of the difficulties mentioned above than to the nature of the treatment itself. Now that treatment can proceed in a controlled and repeatable fashion, thanks to computer technology, one can hopefully expect the publication of research results providing more and more information on the effects of duration, frequency, pulse width, potential, current, and energy on the effectiveness of ECT.

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Gangadhar, B. N., Lakshmanna, G., Subba Krishna, D. K., *et al* (1985) Impedance measurements during electroconvulsive therapy. *Nimhans Journal*, 3, 135–139.

### 'Good Old Days' of Psychiatry

SIR: As a junior psychiatrist, without the benefit of hindsight, I was surprised by some of the comments of Dr Crammer in his article "Twenty-Five Years of the British Journal of Psychiatry" (*Journal*, October 1988, **153**, 434–436).

I hope I misunderstood his passing reference to the uncertain equivalence of male and female psychiatrists: is this really still an issue among our seniors? He merely hinted at his regret for the passing of paternalism and the growing need to explain and justify ourselves in public, but he left us in no doubt about his views on the anti-psychiatry brigade. Not having been around at the time, no doubt I missed much of the acrimony and debate, but surely his accusations of tunnel vision are equally applicable to all those who simply dismiss as emotional and irrational the advocates of alternative medicine, psychoanalysis, and other 'non-medical' therapies.

I chose to specialise in a field which I hoped would welcome an eclectic approach and a free exchange of opinion; perhaps it is just as well I missed out on the 'good old days'.

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## A HUNDRED YEARS AGO

### Medico-Psychological Association

The quarterly meeting of this Association took place at the Retreat, York, on Thursday, March 14th, under the presidency of Dr Clouston, of Morningside, Edinburgh.

Dr Clifford Allbutt read a paper on the Insanity of Children, as distinguished from Idiocy and Mental Weakness. He pointed out that the form of the insanity depended on the degree of mental development, and that as the infant was all movement, so the insane infant was all restless action. The older child was more affectively insane. There was a want of method and reflexion in all the mental disorders of children. Suicide, and even homicide, might occur, but they were impulsive, thoughtless acts, suicide seeming to be the only door open for escape from what appeared to be a serious calamity to the child. Dr Allbutt gave a more favourable opinion of such cases than is commonly held. – The President referred to delirium arising in neurotic children with very slight bodily cause. – Drs Beach, Savage, and others also spoke.

Dr Baker, of the Retreat, read a paper on Ten Years' Experience of the Turkish Bath in the Treatment of Mental Disorders. He demonstrated its use in all cases of blood pollution, such as alcoholism and the chloral and morphia habit, as well as in cases of mental weakness due to gout or similar causes. In defective excretion, in hepatic congestion, and the like, the bath is invaluable; it assists convalescence, as after puerperal insanity, and quiets and relieves even in epilepsy and chronic insanity. Besides all this, it acts as a tonic for the medical officers and general staff. The opinion of those who have tried it, among medical officers of asylums, was strongly in its favour as a rapid and easy way of washing patients, as well as for medical treatment.

A paper by Dr Watson was read on the Use of Sulphonal, and Dr Percy Smith contributed his experience at Bethlem. The result seemed to be that this drug was useful and harmless, one drawback being its insolubility. Dr Yellowlees had seen giddiness produced by it.

The record of a case of attempted suicide was given by Dr Urquhart.

In the evening the members and their friends dined together, and the chairman, Dr Clouston, spoke fully of the present, past, and future of lunacy, showing how much of the humane treatment of the insane had its origin at the Retreat, York, under the direction of the great-grandfather of Dr Hack Tuke.

On Friday a visit was paid to the new asylum for the West Riding at Menston. This asylum has cost £240,000, and is of very substantial construction, with all the newest improvements.

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*The Lancet*, 23 March, 1889, 581.

*Researched by Henry Rollin, Emeritus Consultant Psychiatrist, Horton Hospital, Surrey*

*British Journal of Psychiatry* (1989), **154**, 127–145

# *Book Reviews*

Editor: Sidney Crown

**Emil Kraepelin's Memoirs.** Edited by H. Hippius, G. Peters and D. Ploog. Springer-Verlag. 1987. 270 pp. Dm 46.00.

These memoirs will interest those in disciplines outside that still dominated by the author sixty years after his death. No account of Kraepelin's life has previously been available. With the compilation and publication in German of these memoirs in 1983, and now their translation into English, the editors have made available an extensive and detailed account of the life of the father of 'descriptive psychiatry'.

It is difficult to underestimate Kraepelin's influence. By formulating the disease concept, dementia praecox, that in Eugen Bleuler's hands became schizophrenia, and differentiating it by symptom pattern and outcome from that other entity, manic-depressive insanity, Kraepelin created the framework within which all subsequent discussion has taken place. Although his binary concept is now challenged by the continuum theory (the notion that the recurrent psychoses are distributed along a continuum that extends from unipolar depressive illness through bipolar manic-depressive and schizoaffective psychosis to schizophrenia with different severities of defect state), no psychiatric textbook lacks separate chapters on schizophrenia and affective disorders. Moreover, much of the current interest in achieving greater reliability in diagnosis focuses on the distinction between the two Kraepelinian entities. No-one doubts, in spite of much variability, that there is something in the relationship between symptom pattern and outcome that Kraepelin first clearly perceived, and built into his nosological system.

Yet the binary concept is only a part of Kraepelin's legacy. By his masterly descriptions, later complemented by Bleuler's more speculative psychological constructs, by his insistence that there are underlying consistencies of pattern to be observed, and particularly by his emphasis on outcome and evaluation over time, Kraepelin established the psychoses as diseases that can be systematically described and researched. Thus he put psychiatry on the map as a medical discipline and at the same time initiated serious research into treatment and aetiology.

These memoirs give a chronological account without pretension to philosophical profundity, but tell much about the man and his contemporaries. Kraepelin liked travel (but was not much impressed by what he saw of the US or UK). He experienced personal tragedy (the loss of three children) with stoicism. The breadth of his scientific interests and contacts is perhaps the clue to his impact. Experimental psychology was one such influence. Early in his career, Kraepelin's work in Wundt's laboratory earned him a mention in J. C. Flugel's *Hundred Years of Psychology* as "an experimental psychologist of originality". His studies on work curves, according to Flugel, are "classic experiments on which nearly all subsequent investigations have been based". Kraepelin describes how in his early days in Leipzig, "Wundt's laboratory became my refuge", how he conveyed the best wishes of the Heidelberg Medical Faculty to Wundt on his 70th birthday, and how it meant much to see him again at the age of 86 in the autumn of 1918. At this time, Wundt was completing the 9th volume of his work on ethnological psychology and Kraepelin had published the 8th edition of his textbook on *Psychiatrie* in 1915. Thus were developments in experimental psychology and clinical psychiatry linked in Germany in the early years of the century.

Even more striking, in view of the lack of rapport with mainstream psychiatry that has prevailed since 1950, is the relationship with neuropathology. A feature of this book added by the editors is a series of potted biographies of significant participants. A remarkable testimony to the scientific milieu in Germany at that time is the number of psychiatrists whose names survive in textbooks of neuroanatomy and neuropathology. These include Alzheimer, Brodmann, Edinger, Flechsig, Forel, von Gudden, von Monakow, Nissl, Wernicke, and Westphal.

Kraepelin's relation to each of these is of interest. He gives a favourable account of his training with von Gudden in Munich, and describes his reaction to the news of his death, presumably at the hands of his patient King Ludwig II of Bavaria. Alzheimer joined Kraepelin when he returned to become director of the Psychiatric Clinic in Munich in 1903. From this account it is clear that Alzheimer came initially as a clinician, but later took over the anatomical laboratories for a period before he was appointed to the chair of psychiatry in Breslau in 1913. From Kraepelin's book *Dementia Praecox* it appears that the expectation was that Alzheimer would be able to elucidate the histopathological changes which doubtless were to be found in that condition. Alzheimer's attempts to do this are on record in that book, although of course his fame rests on the description of a case of a quite different disease. As the dementia praecox problem is still with us, one would really like to know how Kraepelin and Alzheimer would have summarised the situation at the ends of their lives. At all events, it seems the two men were on good terms.

Nissl also was close to Kraepelin. He succeeded him in the chair of psychiatry at Heidelberg and eventually became head of the histopathological department of the research institute that Kraepelin established in Munich in 1918. Kraepelin's description of this endeavour makes instructive reading. "Unfortunately we were not able to install all the departments we had intended . . . it seemed doubtful whether we would succeed in finding a suitable chemist under the present pitiful working conditions. We therefore decided to satisfy ourselves with the installation of two histopathological departments under Nissl and Spielmeyer, a topographic-histologic one under Brodmann, a serological one under Plaut and a genealogical one under Ruedin and to leave further development for the future". Later he writes of the need for a nerve physiologist and a statistician. One wonders if there has ever since been a group that brought such expertise and motivation directly to bear upon the problem of the psychoses. Sadly, Brodmann died unexpectedly on 22 August 1918, and Kraepelin's account ends not long after this.

This is a remarkable historical document. Much of it is prosaic, and this perhaps partly explains the difficulty one has in forming an impression of Kraepelin's character from the literature. He seems not to have been greatly concerned with controversies over concepts and theories, but mainly with collecting information on cases, e.g. on a "really large and comprehensive group", and in applying techniques he felt sure were relevant to uncovering the disease process. Contemporaneous with Kraepelin's efforts to elucidate the pathology of the diseases that he had demarcated was progress in understanding the origins and brain changes of neurosyphilis, which then had the sort of status that HIV encephalopathy is now acquiring. Thus, CNS disease processes that cause psychiatric symptoms do exist and their pathogenesis can be elucidated. Perhaps dementia praecox will shortly be included among them. To judge by the effort he was putting into it 70 years ago, Emil Kraepelin might well say that it will not be before time.

T. J. Crow, *Head, Division of Psychiatry, Clinical Research Centre, Northwick Park Hospital, Harrow, Middlesex*

**Group Psychotherapy with Addicted Populations.** By Phillip J. Flores. New York: The Haworth Press. 1988. 563 pp. $39.95 (hb), $24.95 (pb).

In the treatment of the addictions, abstinence is a difficult goal to reach and relapse is dispiritingly common. This may lead to the view that treating this group of patients is not worthwhile or, at best, likely to be ineffective. Such gloomy attitudes are not held by Phillip Flores, who throughout this book makes a plea for therapeutic optimism tempered with the reminder that however severe the dependence or deprived the circumstances, people retain the capacity to change.

While it is essentially a humanistic message to argue that individuals have worth and that addicted individuals need not remain in that state, the question then arises: how is change to be achieved? The author has long experience as a group therapist, and the best parts of this book form a practical guide to this approach. The difficulties of patient selection and retention, of effecting change, and of leading groups are clearly described, with many suggestions as to their resolution. Underlying theories are derived from the American group-analytic tradition, and especially from the work of Yalom.

Only on the important question of evaluation does the book fail. Flores writes that there is convincing evidence to support group therapy as the treatment of choice for addiction. The evidence he quotes is thin and relies overmuch on the assertions of other therapists. That reservation aside, this book is of interest to those applying group therapies to drug and alcohol users.

Andrew Johns, *Senior Lecturer in Psychiatry of Addictive Behaviour, St George's Hospital Medical School, London*

**Endorphins, Opiates and Behavioural Processes.** Edited by R. J. Rodgers and S. J. Cooper. Chichester: John Wiley. 1988. 361 pp. £45.00.

The notion that we produce endogenous opiates for our own use sounds fanciful, and yet in 1975, Hughes and his colleagues isolated opiate fragments now known as endorphins from the brain. Later work showed that both endorphins and drugs of dependence such as morphine and heroin act on a range of opiate receptors. This book summarises a wealth of research which demonstrates that the expression of fundamental drives such as hunger, reward-seeking, and appetite are to some extent mediated by the action of endorphins on these opiate receptors.

In the most fascinating chapter, Colpaert & Shearman describe animal models of addiction to opiates. It is a startling finding that the effect of drugs such as morphine and fentanyl on opiate receptors is partly determined by learning and behaviour. Furthermore, the ability of naloxone to reverse opiate actions is also influenced by behavioural manipulations. These results have considerable implications for the management of drug-dependent patients, for it is evident that those who regard addiction as a purely chemical matter best treated with pharmacotherapy are wilful in rejecting psychological treatments.

Remaining chapters are of less interest to the psychiatrist. Clear and consistent relationships between endorphin activity and illnesses such as schizophrenia and depression have not been found, and opiate antagonists are of little therapeutic value in these conditions.

This book does not answer questions but stimulates thought, and as such it is recommended.

ANDREW JOHNS, *Senior Lecturer in Psychiatry of Addictive Behaviour, St George's Hospital Medical School, London*

**Children of Alcoholics.** Edited by MARGARET BEAN-BAYOG and BARRY STIMMEL. New York: Haworth Press. 1987. 130 pp. £17.95.

For every person with an alcohol problem there is often a spouse and children who share that problem. Often the children of a parent with alcohol problems are neglected, and it is therefore timely to have material on this topic. Unfortunately, this book does not meet the need for helpful information about the children of parents with alcohol problems. Four chapters are original and not very interesting reports related to the foetal alcohol syndrome. There is one original report on alcohol expectancy and conditioning in the sons of alcoholics, one chapter on therapeutic considerations when working with the adult children of parents with alcohol problems, and one chapter on public policy issues.

It would have been more helpful if the book had contained review chapters looking at wide aspects of the problems of children of parents with alcohol problems, with practical suggestions on the prevention and management of the problems among the children. Perhaps the most interesting chapter is that related to public policy issues. It is unfortunate, however, that this just addresses policy issues in the United States and does not compare this with the development of public policy issues in other countries. All in all, the book is rather disappointing.

PETER ANDERSON, *General Practitioner and Senior Registrar in Community Medicine, Oxfordshire Health Authority*

**Feminist Family Therapy: A Casebook.** By THELMA JANE GOODRICH, CHERYL RAMPAGE, BARBARA ELLMAN and KRIS HALSTEAD. New York: W. W. Norton. 1988. 220 pp. £17.95, $32.00.

Of this book's four authors two are psychologists, one is a sociologist, and the fourth is an educationalist, and they practice as dynamic family therapists in Houston, Texas, where they constitute (their own definition) the founders and faculty of The Women's Institute for Life Studies. The book, which is aimed at family therapists of both sexes, challenges some of the basic assumptions of systems theory in conventional family therapy. In particular, it questions what the authors see as the culturally stereotyped splitting of gender roles within families, which tends to place women, in particular, in a double-bind situation of having ultimate emotional power over their offspring (usually) and their partners (sometimes) but of not having the physical, social, intellectual, or financial authority to back it up. Being, often unconsciously, in this situation driven to fulfil their own needs through oblique and manipulative techniques, women reinforce the existing stereotypes of female subjectivity, irrationality, and ultimate incapacity for equal status with males. In addition, they or other family members become neurotic, and seek help.

Despite its formidable title (which may, particularly on this side of the Atlantic, convey a more extremist ambience than the book's humane and balanced approach justifies), *Feminist Family Therapy* demonstrates an even-handed concern and compassion for adults and children of either sex who are caught up in inappropriate gender stereotyping. It is also extremely well, lucidly and (joint authorship notwithstanding) consistently written.

Approximately one-third of the volume describes the authors' general approach ("the goal is change, not adjustment to faulty roles") and their method of working (individual family therapy plus joint consultation). The remainder consists of six detailed case reports. These in themselves would make this book worthwhile reading for all psychiatrists, psychodynamically oriented or otherwise, for they are outstandingly well described and (rare indeed) they describe the false starts and reverses of therapy, as well as the solutions.

With a good index and full but not excessive bibliography, this book deserves a place in both specialist and general libraries.

MARGARET J. LITTLE, *Associate Specialist in Psychiatry, Stobhill General Hospital, Glasgow G21 3UW*

**Recent Advances in Epilepsy (2).** Edited by TIMOTHY A. PEDLEY and BRIAN S. MELDRUM. Edinburgh: Churchill Livingstone. 266 pp. £45.00.

Everyone with an interest in epilepsy will find something of value in this book. With the earlier numbers in the series it provides an 'advanced' textbook on the subject, particularly as the editors have been careful to make the individual volumes complimentary rather than overlapping. Here, as before, there is a mixture of reviews concerning basic mechanisms, with others considering details of various aspects of investigation and management. Noteworthy in the present volume is a long section on the diagnosis and treatment of parasitosis of the central nervous system, important in third world countries particularly, although toxoplasmosis complicating AIDS receives attention. Earlier in the series there has been concentration on specialised EEG techniques, but here a balanced helpful review on conventional EEG is given. Practical points such as the limited value of repeat routine tracings in 'stable' patients are enumerated. Sections on pregnancy and teratogenicity are provided. Although the risk of neural tube defects with valproate is emphasised, incidence appears to be low, at least in the UK. The current state of development of new drugs is reported, but the immediate future is not very promising, as it will be many years before current trial drugs have reached the appropriate criteria for general use. The place of corpus callosotomy in the treatment of chronic patients is reviewed. There is a long and detailed chapter on depression in patients with epilepsy, covering assessment of this using inventories and its management. Many practical as well as theoretical points of interest are covered, including which anti-depressant to use, bearing in mind that they are all potentially convulsant.

The final section, on 'Epilepsy and the law', with both US and UK perspectives, is useful but could have been longer with advice, for example, on the preparation of Court reports. The individual may be dissuaded from purchase of this book by the price, but authoritative essays on various aspects of epilepsy are of a high standard, and access is given to references in the now copious epilepsy literature.

D. F. SCOTT, *Consultant in Charge, Clinical Neurophysiology, Section of Neurological Sciences, The London Hospital*

**Clinical Guidelines in Cross Cultural Mental Health.** Edited by LILIAN COMAS-DIAZ and EZRA E. H. GRIFFITH. New York: Wiley. 1988. 384 pp. £34.50.

This book, written by 17 senior academics and clinicians from the USA and the Caribbean, aims to provide suggestions and guidelines for practitioners working within cross-cultural settings. The first half deals with particular institutions such as the family, language, religion, and politics, as these influence the therapeutic endeavour in various cultural contexts. The second half presents the clinical issues affecting specific groups, chosen from the same geographical areas as the authors. There is a concluding state-of-the-art chapter.

The resulting brew will be of interest to a wider readership than just North American psychotherapists. This is especially true of the first half, where there are discussions such as that of linguistic differences between therapist and patient which can be applied to many therapeutic settings.

Probably the most useful material for British readers concerns the West Indies. One chapter deals with culture, rather stiffly, with little about migration or police–psychiatrist relations. Elsewhere there are good discussions of the political history of psychiatry in Jamaica, and the healing potential of some West Indian religions.

Much of Britain is already multi-cultural, and is likely to become more so after 1992. Few psychiatrists get much preparation for cross-cultural work. When will we see, for example, a sensitive discussion of the therapeutic potential of those Asian religions now widely practised in Britain?

BERNARD INEICHEN, *Senior Research Fellow, Newham Health Authority*

**I: The Philosophy & Psychology of Personal Identity.** By JONATHAN GLOVER. London: Allen Lane. 1988. 207 pp. £15.95.

This book is exceptional in that it is written by a philosopher who makes few mistakes about neurological and psychiatric facts, and also addresses concerns which are of immediate and practical interest. It falls into two parts. The first largely consists of clinical examples – multiple personalities, split brains, and a variety of thought experiments based on altering or transferring the electrical activity of the brain to another medium. The author uses these to nibble away at the commonsense idea that each person has one and only one self.

This is preliminary to introducing the argument that selves change. There is an extensive review of the work of Parfitt, who questions whether a person in their twenties may say "I will do so and so when I am older" and say, correctly, in their fifties that "I did not make that promise then, it was my younger self". Glover does not consider the obvious objection to this, that "I will..." statements are public commitments rather than assertion of private truth, and thus must be judged according to the continuity of the public, physical self rather than the continuity of the private ego. He does, however, point out that continuity of the body may not in the future be any more inviolate than continuity of the personality: what, for example, of the person who has had a brain transplant?

Glover uses these arguments as a springboard in part 2 for a 'fuzzy' conception of the ego as being something like a nation whose boundary and population may change without altering its identity. He is prepared to dispense with most of the characteristics attributed to ego, but not to lapse into determinism or to deny that we each of us have a responsibility for the creative productions that we call "my life". He writes, for example, that "without the ego the episodes of life can seem like a heap of stones... it does not much matter whether some extra stones are dumped on my pile or on some other one. But, if I see the stones as part of a building I am creating, being cut off with too few stones can ruin everything".

The reader may disagree with this moral stance, and may notice creaks in some of the arguments that lead up to it. I doubt that there will be many who will deny that the right issues are being debated, however, and the debate is held with great skill. I recommend the book highly.

DIGBY TANTUM, *Senior Lecturer, University Hospital of South Manchester*

**The Neuropathology of Temporal Lobe Epilepsy.** By C. J. BRUTON. Maudsley Monography 31. Oxford: Oxford University Press. 1988. 158 pp. £20.00.

This monograph is a clinico-pathological survey of 249 cases of anterior temporal lobectomy performed by Murray Falconer from 1950 and 1975 on patients with intractable epilepsy. The series is of great interest, not only because of the systematic pre-operative clinical examination of the patients with EEG, psychiatric and radiological studies, but also because the operation that followed was an *en bloc* removal of the anterior temporal bone allowing subsequent full pathological assessment. In addition, a long-term follow-up was carried out. The results of this work have been published piecemeal before, but the present volume is based on an MD thesis reassessing the series. Fortunately, unlike so many books extracted from submissions for higher degrees, it is clear and readable, and is helped by the main tabulations of details of individual patients, for example, appearing as an appendix. The pathology is reconsidered and the patients likely to benefit from surgery, both in terms of seizure control and also social adjustment, are set out succinctly in a 'league table'.

The classification of specimens could possibly be faulted, and it is a pity that none of the newer immunohistological techniques were not applied. Presumably blocks of uncut material are still available for assessment. From the clinical point of view, patients with sclerosis were shown to have a good prognosis, while those with no apparent pathological abnormality in the resected tissue, or with multiple pathology, did badly both in terms of fits and in the social sphere. The illustrations are good, and the standard of production and quality, as for the Maudsley monographs in general, are notable.

Many points could be selected for comment, but of particular interest is the change of course in the series. Psychotic patients were operated on at the beginning, but poor results led to their subsequent exclusion. Also, we are reminded that intractable epilepsy carries a considerable mortality. Sadly, the title is somewhat misleading, as the book deals only with surgical specimens. Nevertheless, it should command a wide readership, because of the implications concerning treatment of all patients with chronic epilepsy. The monograph forms a deserved memorial to the work of the late Murray Falconer, not least for the stimulus he gave to many from various disciplines whom he inspired, not only over the period of the study but also to the present time.

D. F. SCOTT, *Consultant in Clinical Neurophysiology, Dept of Neurosciences, London Hospital, Whitechapel*

**Schizophrenia: an integrated approach to research and treatment.** By MAX BIRCHWOOD, STEPHEN HALLETT and MARTIN PRESTON. 1988. 403 pp. £12.95 (pb).

It is very pleasing to find an outstanding new book on schizophrenia which comes not from a 'centre of excellence', as conventionally defined, but from three clinical psychologists working at an NHS psychiatric hospital in Birmingham. What is even more surprising, in view of the quality of this work, is that none of the three has previously published much in this field.

The book's five major sections deal in turn with the problem and concept of schizophrenia, biological factors, environmental factors, treatment and rehabilitation, and finally an adumbration of the authors' own integrated model. As psychologists, they show a special interest in the analysis and modification of abnormal phenomena, both experiential and behavioural, but their approach is broadly eclectic, giving a fair account of all significant viewpoints. There is an overall concern with the validity of the concept of schizophrenia. Compared with books on the subject by psychiatrists, there are much more lengthy discussions here of, for instance, attempts to reduce hallucinations by psychological methods, whereas the section on pharmacological treatment is very brief. Since the first of these two approaches has not yet achieved any clinical application, it might have been more useful if this disproportion had been less. At the same time, the authors are right to point out that ward environments that were behaviourally organised in an effective way could benefit acute as well as chronic patients.

Probably the best section is that on environmental factors. None of its material is entirely new, but very complex arguments and bodies of evidence have been reassembled and conceptualised so as to give a clear and coherent statement of present knowledge. It is useful to be reminded, for instance, that there is no simple equation between concordance rates among twins and the relative contribution of genetics and environment. The section on cultural factors, though, does not mention Westermeyer's important studies in Laos. Environmental factors, of course, include life events, and this evidence is critically evaluated: retrospective studies, it is rightly pointed out, throw no light on how many patients face similar crises *without* incurring an emergence of symptoms, while the usual research design cannot answer the question of whether or not the episodes of illness would have occurred without these events.

The discussion of the complexities and difficulties of biochemical investigation is also excellent, emphasising that any hypotheses implicating simple unilateral transmitter excesses or deficiencies are likely to be oversimplifications. Another important point is that immense biochemical sophistication has often been wasted by poor methodology at the levels of behavioural definition, description of the subjects, measurement of behavioural change, and control of environmental factors that might influence behaviour or biochemical functioning. When dealing with brain structures, the authors focus on the corpus callosum and inter-hemisphere integration; partial failure there could theoretically result in each hemisphere regarding the other as being 'not-of-the-self', and thus account for first-rank symptoms; further research along those lines might well be rewarding.

At the end, the 'integrated approach' doesn't really come as any great new revelation; few will disagree with the proposition that schizophrenic vulnerability is more likely to reflect abnormalities of cerebral function and organisation, rather than gross anatomical disruption, and that a variety of psychological, educational, and psychosocial interventions might minimise its full expression. However, the practical implementation is likely to be more difficult. No doubt vulnerable patients outside hospital should receive "comprehensive psychosocial interventions" and "additional educational and compliance enhancement procedures", but how is any health district going to provide this to the hundreds of people involved?

This is an ideal work for any professionals embarking on the serious study of schizophrenia, and psychiatric trainees will find it very useful, in combination with more specialised books. Clinicians also could well use it as a stimulating update. Unfortunately, the book is marred by frequent misprints, faulty grammar, and chaotic punctuation which call for determined editing before the next edition appears, as it undoubtedly will.

Hugh Freeman, *Editor, British Journal of Psychiatry*

**Contemporary Issues in Obstetrics and Gynecology, Volume 2: The Premenstrual Syndromes.** Edited by Leslie Hartley Gise. Edinburgh: Churchill Livingstone. 1988. 157 pp. £28.00.

Few diagnostic categories have provoked more dispute than the premenstrual syndrome (PMS). While acknowledging the controversy, Gise insists that "PMS does exist", and his book brings together 12 new conference papers to provide "the only compilation to date of both gynecological and psychiatric perspective, as well as results of current research on the biochemistry and pharmacology of PMS". Limited editing of these papers leaves much repetition of background information, but the medical findings are usefully detailed, and there are also intriguing papers on the implications of claiming PMS as a criminal defence, and on the difficulties of obtaining treatment.

Although individually interesting, together these papers reveal the fragility more than the robustness of the category. They illustrate that even workers in the field cannot agree on its parameters; that there is evidence supporting quite contradictory hypotheses; and that almost any treatment, placebo or otherwise, will generally produce reported improvement. Editorially, these difficulties are glossed by the suggestion that "PMS is not a single discrete entity or a specific syndrome, but a heterogeneous group of symptoms better named *premenstrual changes*". This approach is not developed in any of the papers, however, and at the end of the book, one is more struck by the observations of a 'consumer' of PMS services: "As a result of the 4 years I spent seeking help for serious premenstrual symptoms, I concluded that there is no such thing as objectivity. We like to think that science is neutral, but in actuality 'facts' depend on the questions asked, how they are posed in relation to other things, and what researchers expect to find."

Hilary Allen, *Middlesex*

**Eccentrics: The Scientific Investigation.** By David J. Weeks and Kate Ward. Stirling: Stirling University Press. 1988. 259 pp. £27.50.

This excellent book reports a project that started with cards placed strategically saying: "Eccentric? If you feel you might be . . . contact the Royal Edinburgh Hospital". But newspapers, radio and television led to this message reaching an estimated 30 million people between 1984 and 1987. This 'multimedia sampling' produced 130 eccentrics.

The 74 men and 56 women were studied first by using a 90 minute audiotaped interview. This speech sample was analysed using a scale of assessment of thought, language and communication published by Nancy Andreasen in 1986. The commonest findings were pressure of speech, tangentiality, circumstantiality, and self-reference. Cattel's 16 PF test was used to assess their personalities: seven criteria emerged. An appendix gives in full the Eccentricity Predisposition Self Test which was derived from this study. I hope we will hear more of this new test.

Only one subject was thought to have a clear psychosis, and he tried to demonstrate his commando throat-cutting drill on the visiting researcher. Much attention is paid to discerning thought disorder, and a most interesting account of using the PSE is given.

The results are set out attractively, with lengthy selections from the accounts of the eccentrics, and a stimulating and provocative account of the way the findings can be viewed in the light of modern knowledge. There is a brief historical survey of some eccentrics of the past four centuries. The book will be of great interest to all psychiatrists and psychologists. Whatever the criticisms of a self-selected group may be, this immensely readable book describes a study that breaks new ground, where others should certainly follow. It will be a hard task to write with comparable grace and learning.

GAIUS DAVIES, *Consultant Psychiatrist, King's College Hospital, London*

**Positive Psychotherapy: Therapy and Practice of a New Method.** By NOSSRAT PESESCHKIAN. Berlin: Springer Verlag. 1987. 442 pp. £17.50.

This book has the aim of amalgamating different strands of psychotherapeutic thought from the East and the West. The author presents his therapeutic framework as a practical guide rather than a new theory, with the emphasis on short-term focused work, and hopes that it will be useful to a wide audience. These are aims which most of us would like to achieve, and I began reading with some interest.

However, it seems to me that it falls between two stools. On the one hand, the introduction by the author of his own system of nomenclature means it is difficult to grasp the framework of treatment described. On the other hand, the inclusion of Oriental folk tales and the very simple clinical cases described make it seem at times like pop psychology from another era.

Although interesting, this is not a book I would recommend for a library and, at the price, not one that would be sufficiently useful for individual professionals to buy for their personal use.

RACHEL LEHEUP, *Consultant Child Psychiatrist, Child and Family Therapy Service, Nottingham*

**Use of Anticonvulsants in Psychiatry: Recent Advances.** Edited by SUSAN L. MCELROY and HARRISON G. POPE. New Jersey: Oxford Health Care Inc. 1988. 188 pp. $22.50.

This is an American multi-authored text. The opening chapters focus on individual anti-convulsant agents, while other chapters deal more specifically with anticonvulsants in the treatment of various psychiatric disorders. The information is presented in an authoritative fashion by active researchers in the field.

The section on phenytoin makes the point that early open studies of this drug in the treatment of psychiatric patients gave encouraging results, but that these have not been replicated by more stringent research. That well-known phenomenon of early enthusiasm being dampened by data needs to be borne in mind when reading this text. Although the evidence for the use of carbamazepine in bipolar disorder is convincing, much of the evidence for other drugs and other indications comes from open studies, single case studies or personal experience, or isolated double-blind studies. Discussions of the possible mode of action of anticonvulsants in some of the secondary indications are therefore particularly speculative.

The research-minded psychiatrist will find that this text stimulates many ideas for potential projects based on the preliminary data and speculations put forward by the authors. The book also contains practical advice on the use of anti-convulsants in psychiatric syndromes, although access to this is handicapped by the lack of an index.

Few would buy this book for their personal library, but it would be a useful, although not essential, addition to the library of departments which have a research interest in psychopharmacology.

MALCOLM PEET, *Senior Lecturer, Department of Psychiatry, University of Sheffield*

**Society, Stress and Disease, Vol. 5: Old Age.** Edited by LENNART LEVI. Oxford: Oxford University Press. 1988. 383 pages. £75.00.

This is the final volume in a series based on international symposia sponsored by the WHO and the University of Uppsala. Previous volumes dealt with the psychosocial environment and psychosomatic diseases, childhood and adolescence, the productive and reproductive age, male/female roles and relationships, and working life. The blurb states that the contributors "examine research into the mental and physical effects of old age, and the medical and social measures that are being taken to ameliorate them. The topics covered include the mental and physical effects of retirement, of work, of illness at home and in hospital, and studies of different communities in America, rural France, Africa, the Soviet Union and elsewhere, to discover the ways in which various social and family structures in different countries affect the well-being of the elderly".

Selye contributes chapters on 'Stress and ageing' and 'Stress without distress'. Sainsbury's chapter has particular regard to suicide. Birren, Butler and Eisdorfer are among well-known psychogeriatric 'names'. The topics range widely – from a behavioural approach, to theories of ageing, to "pet facilitated therapy, or PFT". There is far more about retirement than bereavement, even though the effects of the former on morbidity and mortality are far less important than the latter.

Alvar Svanborg's taster of his survey of septuagenarians in Gothenburg, distinguishing between functional and chronological ageing and noting that the main cognitive decline with ageing is in sensori-motor speed, is very familiar, which is not surprising when one notes his statement that the first follow-up will start in September 1976! A quick flick through the book's references reveals that few are after this date (although one or two contributors have tried to bring their work more up to date), which suggests an extraordinarily long delay between the symposium and the publication.

There are pleasures for the dilletante, for example quotations from Byron, Cicero, and Simone de Beauvoir, and a list of creative old people which joins Casals, Benjamin Franklin, Karl Menninger, Pavlov, Verdi, and Tolstoy with Barbara Cartland! For the serious reader, however, too much of the book is superficial and familiar. At £75 it is far too dear, even for most libraries, although the contributors may wish to be reminded of what they and their colleagues had to say all those years ago!

BRICE PITT, *Professor, Academic Unit for Psychiatry of Old Age, St Charles' Hospital, London*

### The Measurement of Depression. By ANTHONY J. MARSELLA, ROBERT H. A. HIRSCHFELD and MARTIN M. KATZ. Chichester: John Wiley. 1987. 411 pp. £38.50.

This book represents the distillation of contributions to a workshop held in Hawaii in 1984. All the contributors are from the United States, but there is extensive discussion of British and other non-American measurement instruments.

The book is divided into four sections, concerned with clinical, biological, behavioural, and psychological and psychosocial measurement of depression. The contributors are well known in their field and include Klerman, D. F. Klein, Andreasen, Stokes, Weissman, Rehm, Rush, and Lewinsohn. These authors have not just described their own work but have extensively reviewed most of the English literature in this field, and the book provides an excellent reference textbook, particularly with regard to the historical development of assessment indices. The chapter by Rabkin & Klein on the clinical measurement of depressive disorders is particularly relevant in this context, and provides a comprehensive 50-page review with detailed analysis of the Hamilton Raing Scale for Depression (HRSD) and a disinterested account of the General Health Questionnaire, and the Mongomery-Åsberg and Newcastle Scales. I was interested to see that the HRSD has now spawned two derivatives: the endogenomorphy subscale, and the extracted Hamilton for use with the Schedule for Affective Disorders and Schizophrenia. A number of scales have now been designed to measure cognitive function and cognitive change, and these are described in detail. I was also amazed to find that there are 30 published studies of social adjustment questionnaires, including 16 reviewed in this book.

This is a useful book, providing a detailed broad overview of the measurement of depressive experience. Although the topic is unlikely to provide a feature article in the Sunday papers, the text is easily read and assimilated. The book is attractively produced, and although there are occasional errors, e.g. DSM–III transformed to DMS–III, it represents good value for money.

S. P. TYRER, *Consultant Psychiatrist, Royal Victoria Infirmary, Newcastle upon Tyne*

### The Challenge of the Borderline Patient. Competency in Diagnosis and Treatment. By JEROME KROLL. New York: Norton. 1988. 237 pp. £17.95.

Kroll is known here for an article, or rather for the title of an article, which investigated how many borderlines there were in a Cambridge psychiatric ward. The title captured the disbelief of most local psychiatrists in the relevance of the diagnosis: 'Are there borderlines in Britain?' (*Archives of General Psychiatry*, 1982, **39**, 60–63). With similar amusement, the first chapter of this book examines the political, historical, and scientific pressures surrounding the delivery of the DSM–III borderline and schizotypal categories. Although some will rejoice in this as proof of the supposed shambles of American psychiatry, it is in fact an exposition of the social and cultural context of any scientific development. Hypotheses and discoveries are necessarily children of their times, and may start in any form from pristine logic to nightmare (remember Kekule's benzene rings), but will stand or fall on their heuristic and pragmatic value. Kroll knows this very well, and one of his most convincing chapters looks thoroughly into the evidence that supports or disproves the alleged dependence of borderline personalities on affective disorders.

In the second part, Kroll takes the opposite strategy: surprisingly, he de-contextualizes psychotherapy from any theoretical grounding and describes certain predominant borderline themes – such as victimisation, loneliness, cognitive disorganisation, and emotional intensity – as though they were hanging loosely in mid-air. His preferences for therapy oscillate – and most practitioners will agree – between supportive and exploratory. In numerous vignettes he shows what he does: mostly short-term and strategic interventions. The psychotherapy is based on a cognitive model, with considerable borrowing from psychoanalysis, an apparently atheoretical pragmatic approach that will appeal to many who are puzzled and simply do not know what to do with their borderline patients.

In this very personal book Kroll gathers an impressive clinical experience on diagnosis, research, and management to assist those "who get themselves into difficulties because of their own problems ... insufficient knowledge and inadequate training". A commendable last chapter describes the entanglement suffered by anybody who does a little more than a botanical classification of their patients. The interpersonal view is very convincing, although again, countertransference is deprived of its psychoanalytic context, as though it were an *ad hoc* borderline phenomenon. However, there is a final surprise. Having espoused Kroll the social historian, Kroll the sceptical phenomenologist, and Kroll the cognitive therapist, the reader meets another Kroll giving this unequivocal advice: "The best we can say is that when a therapist finds that most of his patients seem to respond to him in the same unproductive way, he would do well to look into his own behaviour and obtain peer consultation or psychotherapy".

ALEX TARNOPOLSKY, *Consultant Psychotherapist, The Maudsley Hospital*

**Psychotherapeutic strategies in the latency years.** By CHARLES A. SARNOFF. New Jersey: Jason Aronson. 1987. 275 pp. $30.00.

**Psychotherapeutic strategies in late latency through early adolescence.** By CHARLES A. SARNOFF. New Jersey: Jason Aronson. 1987. 374 pp. $37.50.

Editors of learned journals are prejudiced against duplicate publications. I share that prejudice, and wondered on approaching two volumes with similar titles if one would have sufficed. My question soon became was there substance enough for one?

Sarnoff, a child and adult psychoanalyst in practice in New York, brings descriptive and developmental perspectives to bear on the seemingly quiescent years of latency (6–12) through to early adolescence. As the term suggests, nothing much of maturational importance was thought to happen in latency, yet in fact this is a time of rapid psychological change from being self-centred and inexperienced to being culture-centred and possessing refined social skills. The author intends a practical turn as specific developmental change is linked with necessary alteration in psychotherapy approach; his skill as a therapist shows in the many case examples. He is at his best, dense though the text is, in discussing the shift in cognition to masking symbols and the defensive use of repression and reaction formation to produce the surface calm of a time in life that has perforce to be that of a "biologically-celibate soldier-dwarf".

Where the books fail is in their relentless focus on unconscious fantasy as the be-all of development; the author appears to be stuck in a time-warp of classical Freudian thought. Whatever has happened to the developmental insights of Erikson, Mahler, and Bowlby, or the concept of the child being in a dynamic relation with other members of the family system? Even these omissions might not have mattered had the author either offered supporting research evidence or been less sure of the correctness of his interpretation when plausible alternatives exist. On a positive note, it is important to recognise the influence of fantasy, particularly that of destroying and being destroyed, and the way in which aggressive and sexual drives that emerged in the oedipal phase have to be first repressed, and then expressed in symbolic form as part of development. To this aspect, the author does more than justice.

MARK AVELINE, *Consultant Psychotherapist, Nottingham Psychotherapy Unit*

**Social Origins of Distress and Disease.** By ARTHUR KLEINMAN. New Haven: Yale University Press. 1986. 264 pp. £20.00.

As readers of this journal will already be aware, Arthur Kleinman, who teaches both anthropology and psychiatry at Harvard, has a rare blend of skills among psychiatrists. This is his second major book, and is subtitled 'Depression, neurasthenia, and pain in modern China'; it is based on work which began with field-research studies of illness and care in Taiwan, but transferred in 1978 to the mainland. The objectives were both to learn about the experience of illness among Chinese people and to improve understanding of how culture in general relates to emotions, mental illness, and human distress. If unusual in the West, this kind of medico-social research was entirely new in China before the studies reported here. Central to the book is a dialectical model by which social and biological processes overlap and are inter-related in illness.

To western psychiatrists, the unexpected finding is that in China, neurasthenia – that diagnostic has-been – is a popular sickness category both for patients and doctors, and as compared with depression, its epidemiology there shows a situation the reverse of that of western countries. Although it implies a physical disorder, usually seen as weakness or exhaustion of 'the nerves', it is understood to include social and psychological antecedents and consequences, as well as biological ones. Within limits, it frees the identified person from home and work commitments and from the responsibility for his actions; those limits have been the consequences of major political campaigns, although with current trends, it may be that even opting out from these is now becoming possible. This rather Pavlovian model is, surprisingly enough, resonant with Chinese tradition, whereby sickness allowed officials to withdraw to a safe retirement if they felt insecure in the public domain. Kleinman found that many patients with this diagnosis improved with antidepressants, yet rarely agreed to a reinterpretation of their illness in such terms as depression or panic disorder. Since the Communist regime began, depression had on the whole been a politically unacceptable state, as it could be taken to imply dissatisfaction with the way things were. However, he reports that the present status of neurasthenia as a biomedical disease is uncertain and changing; if 'modernisation' continues, it looks very much as though depression will displace neurasthenia there, as in most industrialised societies. Up to now, though, there have been political restrictions on gathering data about such sensitive topics as suicide.

The book is concerned to use this specific research material as the basis for cross-cultural study of the way the body is experienced, and of human reactions to stress and misfortune. The author well conveys his conviction that without macrosocial changes, the burden of misfortune and misery is unlikely to be lightened in any society. Yet he understands that such changes, including public health interventions, not uncommonly have unintended negative consequences, so that the righting of old wrongs may produce new ones. "Even without altering the macrosocial sources of misery.... Those at greatest risk can be identified, helped to cope, protected." That, surely, is the primary function of medicine and its sister professions. Modestly, Kleinman says that his work "merely points up the kinds of issues that must be studied more fully and widely". It has certainly done that, and more.

HUGH FREEMAN, *Editor, British Journal of Psychiatry*

**The Psychological Consequences of Crowding.** By UDAY JAIN. 142 pp. 1987. New Delhi: Sage. Rs95.00.

The author, who is a Reader in Psychology at Bhopal University, has undertaken a number of both field and laboratory studies to assess the impact of crowding in India. This is clearly the kind of setting where such work particularly needs to be done (79% of families in Calcutta live in one room), yet hardly any research of this kind has previously been reported from developing countries. The theoretical introduction to the book, though, makes surprisingly little mention of cultural factors, which are in fact essential to the experience of crowding. What does emerge in the Indian findings is that crowding tends to cluster with poverty and with shortage of both spatial and non-spatial resources; the Indian environment is characterised by high population density and by scarcity of all resources.

The new data reported here show that this high density leads to intense competition for the limited resources, which may have an adverse effect on relationships, but that the better educated may actually benefit from the process through the development of 'competition tolerance'. Attempts were made to measure the effect of density (through the feeling of being crowded as a mediating factor) on mental health, although the measures used of the latter were quite inadequate. What does seem to be noteworthy is that unlike Western findings, concern for neighbours and others generally remains intact in India, even under the stressful conditions of intense crowding; perhaps increasing westernisation may erode this positive aspect.

It is ironical that these findings should have been reported from Bhopal – scene of one of the worst environmental disasters of recent years – although the work was in fact done elsewhere. It represents a useful contribution to a still inadequately investigated subject.

HUGH FREEMAN, *Editor, British Journal of Psychiatry*

**Race and Culture in Psychiatry.** By S. FERNANDO. London: Croom Helm. 1988. 234 pp. £25.00.

In a concise volume Suman Fernando has explored the practice of psychiatry as it is carried out in a multicultural and multiracial setting. This is a book about assumptions and their consequences; theoretical assumptions about the certainty with which our ethnocentric Western diagnostic systems can be applied to other cultures, and practical assumptions such as those about dangerousness of black patients which have resulted in an excess of black people being detained compulsarily in hospital. But above all, it is a book which challenges the view that as psychiatrists we can be or should ever truly attempt to be 'colour-blind'.

The author traces the history of psychiatry and demonstrates how racist ideas, masquerading as scientific facts, have been silently incorporated into psychiatric practice, from the early days of this century when the smaller brain size of Negroes was considered to contribute to their alleged "inferiority" through to more recent publications which continue to promote stereotyped images of black family life and the "poor emotional differentiation" and "cheery denial" of people from "underdeveloped" cultures. The arrogance inherent in viewing non-Western cultures as 'exotic' is challenged at every opportunity. A blueprint for change is presented, which suggests a number of anti-racist strategies for all aspects of practice from professional appointments to a proposal for breaking links with psychiatry in South Africa. Some of the arguments are perhaps not as clearly put as they could have been, and I for one am unconvinced that the practice of psychiatry in the UK would be improved by being administered by a separate agency linked to social services and outwith the NHS. There is no evidence that social workers are any less likely than psychiatrists to adopt a racist approach, and the author provides a number of examples of how an emphasis on 'culture' in social-service casework, however well-intentioned, may lead to a racist approach in practice.

I found this a highly disturbing book, and I am sure that no-one could read it without uneasily remembering some instance when they are conscious of having made assumptions based on pseudo-scientific "facts" about presentation of illness in patients from other cultures, rather than attempting to explore and understand the feelings, experiences, and social realities of the patient seated before them. It will be hotly debated in circles where such issues are faced daily, but deserves to be read outside them too.

LINDA GASK, *Lecturer in Psychiatry, University Hospital of South Manchester*

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**Trance and Treatment: Clinical Uses of Hypnosis.** By HERBERT SPIEGEL and DAVID SPIEGEL. Washington, DC: American Psychiatric Press. 1987. 382 pp. £15.00.

Central to the arguments of this book is the use of the Hypnotic Induction Profile (HIP), a relatively brief test procedure which, according to the authors, provides both a measure of biological potential for hypnosis and an indication of the level of usable hypnotic capacity. They claim that "if usable or experienced capacity is significantly lower than biological potential, t ... gives an indication of the presence of severe psychopathology".

Spiegel & Spiegel claim that different personality types (which they label Dionysian, Odyssean and Apollonian) tend to be associated with different levels of hypnotisability as measured by the HIP, and they conend that it can be helpful to take account of the patient's personality type when devising a treatment strategy. The book discusses treatment approaches to a variety of problems (e.g. smoking, eating disorders, anxiety, and 'conversion symptoms"), and the authors place considerable emphasis on self-hypnotic procedures.

This is a paperback version of a book first published n 1978. It is disappointing that the text has not been updated. Failing this, one might have expected to see an addendum with information about recent developments bearing on the authors' original assertions. Another demerit of the book is that various errors present in the original version have reappeared. In places, the authors' anguage is ponderous and idiosyncratic, and some of heir diagrams are not very easy to understand.

PETER A. MCCUE, *District Clinical Psychologist, Sale & Brooklands Hospital, Sale, Cheshire*

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**Cognitive-Behavioural Counselling in Action.** By PETER TROWER, ANDREW CASEY and WINDY DRYDEN. London: Sage. 1988. 152 pp. £7.95.

Although not as explicitly acknowledged as it could ave been, the underlying counselling or therapeutic aproach described in this book is drawn largely from Albert Ellis' rational-emotive theory. According to this theory, inappropriate emotions are determined by the irrational beliefs an individual holds about certain events or experiences, and not by the events or experiences themselves. Therapy consists of making clients aware of these beliefs and then eliminating them.

The book has been written as a practical guide to teach trainee counsellors the basic skills of this approach, principally adopting the social skills training model to do this. This entails breaking down the counselling process into a series of clearly described steps, each of which is illustrated with a verbatim example of what might be a typical client–therapist exchange taken from the same fictitious case. The material is divided into four sections. The first provides an all-too-brief overview of the theoretical model. The second, which accounts for about half the book, outlines a sometimes overly elementary and yet insufficient step-by-step account of how to implement this model. The third discusses briefly general techniques for changing irrational beliefs, including the use of homework assignments, while the fourth section shows how the approach can be applied to specific common problems such as anxiety, depression, guilt, shame, and anger.

While an introductory guide on how to apply rational-emotive therapy is needed, it is unlikely that this book on its own will satisfy that requirement. In teaching a skill, it is important that its critical features should be identified and conveyed. Unfortunately, the book does not succeed in doing this. Those unfamiliar with rational-emotive therapy will not grasp the essence of this method from this book alone, and so will not have a clear idea of what it is they are supposed to be doing in counselling.

DUNCAN CRAMER, *Lecturer in Social Psychology, Department of Social Sciences, Loughborough University of Technology*

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**Study Guide and Self Assessment for the American Psychiatric Press Textbook of Neuropsychiatry.** By MICHAEL D. FRANZEN and MARK R. LOWELL. Washington, DC: APA (distributed in UK by Cambridge University Press). 231 pp. £15.00.

The Study Guide is designed as a learning aid written to accompany the *American Psychiatric Press Textbook of Neuropsychiatry*, edited by Robert E. Hales and Stuart C. Yudofsky. The preparation of the study guide has been the responsibility of two psychologists, who claim that its use in parallel with the textbook should promote a more thorough understanding of the material than would be gained by selective reading of the textbook alone. In essence, they provide 15–20 clearly formulated multiple-choice questions per chapter, devoid of the verbal nuances that often bedevil examination questions. The answer section is lucid and succinct, although for detailed reference one must consult the mother volume.

I find this method of ongoing assessment attractive. Unfortunately, closer study was disappointing, revealing a number of errors unacceptable in a teaching manual.

The section on neuropharmacology is weak; particularly so in that the treatments described for hypertension are outdated and those for depression are both older and different from the drugs currently in use in the UK. Most of the other faults can be attributed to the fact that the authors are not clinicians. The wrong sex ratio is given for cluster headaches; only one form of hemiplegic migraine is described; Huntington's chorea and senile chorea are probably a continuum; narcolepsy and sleep apnoea overlap and cannot always be sharply demarcated; an idiosyncratic method of coma grading is presented which bears no relation to the Glasgow Coma Scale; clinicians are taught that the presence of a brain tumour is normally suggested by evidence of a progression of neurological symptoms or signs. This latter fact is obfuscated by unhelpful questions such as: "Which of the following are clinical characteristics of brain tumours – 1. visual loss, 2. psychiatric symptoms, 3. nausea and vomiting, and 4. seizures?", or by the suggestion, earlier in the text, that papilloedema is an early and reliable sign of a tumour. Finally, I believe that the acumen of my psychiatric colleagues is such that, faced with a patient who presents with a neuropsychiatric symptom complex, they would not have to await the development of ophthalmologic abnormalities before clinching the diagnosis of tabes dorsalis.

E. M. R. CRITCHLEY, *Consultant Neurologist, Royal Preston Hospital, Preston, Lancashire*

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**The Mentally Disordered Offender.** By SEYMOUR L. HALLECK. Washington: American Psychiatric Press Inc. 1988. 225 pp. £13.95.

The author is widely respected in forensic psychiatry. He describes himself as a clinician, academician, and correctional administrator with interests in criminology and criminal law. He declares his views unequivocally: that the US criminal justice system deals with crimes, not criminals, and it depends on lengthy imprisonment which is both expensive and excessive. The severity of the system fosters a large amount of civil rights litigation which helps no-one. In a plea which Halleck recognises will have few supporters, he calls for a return to the rehabilitive approach.

In arguing for a greater emphasis on rehabilitation, Halleck recognises that this means more intermediate sentences. For purely economic reasons, society will demand that individuals are changed, and so a rehabilitative model will ultimately be forced. If really genuine attempts are made to provide treatment now, we can ensure that these inevitable developments are humanistic rather than oppressive.

There is a discussion on the subject of mental disorder resulting in transfer from prison to security hospital which will find favour with those who advocate a greater use of prison transfer, so that individuals can be moved back to custody if they are found to be untreatable in hospital. The chapters on lack of capacity and insanity are largely concerned with US practice, whereas the subject of sentencing and treatment of special groups contains a discussion of dangerousness which has broad appeal.

The author describes the way in which mentally disordered offenders are both recognised and ignored in hospitals and prisons. How they are treated is constantly changing, and depends on a resonance between social protection, beneficience, and justice. The speed with which the ethical aspects of such subjects as genetic engineering, surrogacy, and transplanting have been dealt with raises questions as to why so many moral issues are still unresolved in forensic psychiatry.

PAUL BOWDEN, *Consultant Forensic Psychiatrist, Maudsley Hospital, London*

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**Chronic Mental Illness in Children and Adolescents.** Edited by JOHN G. LOONEY. Washington DC: American Psychiatric Press. 1988. 270 pp. £25.00.

This is an account of a population which is mixed and arbitrarily defined. Mental disability does not qualify for inclusion as such unless there is an added psychiatric disorder such as autism, although many might consider the latter to be no more an illness than any other form of handicap. On the other hand, the more topical issue of post-traumatic disability is omitted, perhaps because it is more usually associated with early adulthood.

The book is based on the proceedings of a conference in Dallas. There are 13 detailed and well-referenced chapters which cover the field of chronic disturbance comprehensively. The origin explains the occasional patch of rhetoric, and it is to be expected both that the overview will be sometimes superficial and that there should be some overlap between the authors.

The American scene is surveyed, and there are good accounts of the advantages and drawbacks of the intertwined intricacies of public and private sector care. The extent and variety of American services means that there is much that is comparable with our own. We can learn from their example, and thereby might avoid being tied either to repeat their mistakes or to reinvent their wheels. This is not a book about clinical management: although there are some poignant vignettes, these are to set the scene. It is a book about the provision of services, and is for those who plan and campaign for such. It might provide much grist to a parliamentary mill.

In this country the quality of our special schools has masked many of the problems associated with chronic disorder. It is often at school-leaving that these are flushed into an unsupported open. Where before these patients were tidied away into the mental hospitals, now the pursuit of care in the community means that this provision is no longer available. Many alternatives are suggested, but few succeed in the face of inadequate funds, enthusiasm, or expertise. Here is a useful introduction for those who find that they have to suggest and implement yet one more solution.

T. P. BERNEY, *Consultant Psychiatrist, Nuffield Child Psychiatry Unit, Newcastle upon Tyne*

**Viruses, Immunity, and Mental Disorders.** Edited by EDOUARD KURSTAK, Z. J. LIPOWSKI and P. V. MOROZOV. New York: Plenum Publishing Corporation. 1987. 468 pp. $65.00.

This volume contains the proceedings of the first World Conference on Viral Diseases, Immunity & Mental Health, held in Montreal in 1984. That it has taken nearly four years to reach the shelves probably reflects the massive editorial task of soliciting 42 chapters from 136 international contributors.

The first of the five sections concerns viruses and organic mental disorders. The opening chapters discuss slow viruses and transmissible dementias. Although this area is fertile ground for conjecture and controversy (e.g. should such agents be regarded as viruses or not?), there is also considerable consensus. Other worthwhile contributions review the sequelae of herpes virus infections (Greenwood) and infectious mononucleosis (Hendler), the latter lucidly considering the difficulties of studying psychopathology due to the ubiquitous EB virus.

Part 2 relates to viruses and functional mental disorders. The viral hypothesis of schizophrenia has been enthusiastically pursued in Eastern Europe, and it is an engaging feature of the book that contributions from the Eastern bloc appear alongside more familiar sources such as the Northwick Park group. The empirical evidence presented here is less than persuasive. A Czech/Soviet group found raised HSV antibody titres in schizophrenic subjects, but only in Czechoslovakia, not in Siberia. They were unsuccessful in isolating viruses. Other Russians found paramyxoviruses in post-mortem brains of 'febrile schizophrenia' cases, but the diagnosis would not be universally recognised and clinical detail is inadequate. Israeli and Italian virological and immunological studies were also negative. The only chapter in this section not on schizophrenia (Amsterdam *et al*) is an interesting small study demonstrating antibodies to Borna virus in some affective disorder patients. Experimental inoculation of the virus in tree shrews produces a chronic cyclical behavioural syndrome, potentially a model for bipolar disorder.

The third section discusses various models of possible viral aetiology of neuropsychiatric disorders. These chapters are of limited interest to clinical psychiatrists.

The longest part of the book is entitled 'Immunity, interferon and psychiatric disorders'. A reader limited for time is recommended to read no more than the excellent review by DeLisi which introduces the section. It is authoritative and more balanced than some other contributions. Various immunological abnormalities have been identified, including decreased immunoglobulins, abnormal lymphocyte function, and autoantibodies. The problem remains that it is unknown whether such observations bear any relation to aetiology or are secondary phenomena.

The final section is a miscellany, including a workmanlike review of encephalitis lethargica by Hoenig & Abbey.

Frequently stimulating, this book contains contributions from leading authorities, and demonstrates the limits of knowledge in several directions. On the other hand, most of the worthwhile material has already been published; and, if not, the rest cannot have impressed the peer reviewers! It is already dated in that only two chapters concern AIDS, and the discussion of the post-viral syndrome has also been overtaken by recent advances. My overall impression is paradoxical: I enjoyed reading it, but could not wholeheartedly recommend its purchase. Borrow it if the local library has a copy, or skim through it in the bookshop.

TOM DENING, *Senior Registrar in Psychiatry, St Crispin Hospital, Northampton*

**Humors, Hormones and the Mind.** By BERNARD T. DONOVAN. Basingstoke: Macmillan. 1988. 291pp. £4.00 (pb), £14.95 (hb).

This book is an overview of human hormonal action, their controlling mechanisms, and most importantly their effects on behaviour. It is written by a well-known authority and is aimed at a wide readership, including the non-specialist. Donovan has written a clear non-technical book that is easily accessible and never boring. Indeed, even for the specialist a book of this nature is most welcome, as the profusion of knowledge in the field makes it at times difficult to see the wood for the trees.

The book is divided into three sections: an introductory section, a section on hormonal systems, and the final, and longest, section which discusses hormonal effects on the mind. The artificiality of such a layout is recognised by the author, who provides numerous cross-references so that those seeking more substantial information can easily access other sections. The meat of the book is the third section, which deals with hormonal effects on behaviour, including chapters on the hormonal contribution to masculinity and femininity. By avoiding dogmatism and combining fact with scientific anecdote, this part of the book succeeds well, providing entertaining and informative reading.

This is a modestly priced book by current standards and can be recommended as a worthy introduction to the effects of hormonal action and human behaviour.

R. J. DOLAN, *Consultant Psychiatrist, Department of Psychological Medicine, The National Hospitals for Nervous Diseases, London*

**Search for the Causes of Schizophrenia.** Edited by H. HÄFNER, W. F. GATTARZ, and W. JANZARIK. Berlin: Springer-Verlag. 1987. 386 pp.

Lord Rutherford is said to have observed in a physics colloquium that he could not keep up with the literature in his subject because he was too busy writing it. Today, in the case of schizophrenia, scanning even the majority of the relevant new papers and books could leave little time for original research, but in this flood of information – which is in fact far from consistent within itself – a special volume from Heidelberg deserves some priority. It is special firstly because it records a meeting held on the University's 600th anniversary, and secondly because that city has almost certainly been the most important single venue in the history of schizophrenia. As Carpenter points out, many of the essential questions, methods, and initial contributions first emanated from there, while its professorial trio of Kraepelin, Jaspers, and Schneider is almost certainly unbeatable in any international league. The occasion resulted in a work of 33 chapters which contains much impressive material. Each section concludes with a critical discussion, and there is a final summing-up by Häfner.

One major theme is that of cohesion versus diversity. On the question of classification, Sass describes both increasing uncertainty as to where the boundary should be drawn between idiopathic psychoses and those of organic origin, and a prevailing view that the schizophrenias are a group of aetiologically heterogeneous disorders, which break down into different nosological subgroups. On the other hand, Wing says firmly that "I cannot see the concept of schizophrenia being abandoned for a long time to come", even though it is unlikely to emerge as "a kind of inviolable Platonic disease entity". For him, the reliable description of phenomena is the central issue, not least because "it does justice to what patients and their relatives are most concerned about"; the great achievement of Heidelberg psychiatry was "the limpid exposition of phenomenology".

Probably the most important contribution here is Häfner's own on epidemiology. He rightly points out that aetiological models should be consistent with epidemiological data, but that because of their composite nature, prevalence rates are not generally suitable for testing such hypotheses. One intriguing aspect is the delayed onset and relatively more benign course in females over the first three years; after that, a rapid catching-up of morbidity suggests that a possible protective effect of oestrogen on dopamine metabolism might have become eroded. Zubin asks whether incidence rates might be affected by differences in mortality, but does not stay for an answer; this could well be a most important question about the data from developing countries. In relation to the course of illness, Strauss suggests that recent research is returning to the Kraepelian notion of longitudinal processes. He sees outcome as heterogeneous, with such features as symptoms, work capacity, and social relationships all related to each other yet partly independent, and each tending to show some consistency over time. In Strauss' view, studies of arousal, like most other concepts of schizophrenia, see patients too much as the passive objects of environmental forces and of the disease itself, whereas they might be helped to play a more positive role, for instance through Brenner's attempts to modify cognitive deficits.

The section on genetics shows Strömgren somewhat playing devil's advocate, suggesting that adoption studies have over-estimated the genetic contribution. Yet it certainly seems true that whatever may be inherited, schizophrenic symptoms and malfunctioning are acquired by social learning and human interaction, and that as long as we have no markers for any nosological entity within schizophrenia, the 'validity' of diagnostic criteria remains quite arbitrary. Hirsch, reviewing the biological chapters, suggests that the concept of a maturational defect could both fit the generally accepted genetic evidence and explain the early onset of adult schizophrenia. The model of neuroleptics simply blocking the dopamine receptor has become more sophisticated, and he suggests the possibility that variations in dopamine levels within schizophrenic brains might be due to inherent left–right differences, which are not related to the illness but become evident after the brain has been exposed to neuroleptics.

A focus of much discussion here is the role of life events and their 'independence' of the relevant illness, which proves to be a much more complex matter than was envisaged 20 years ago. Tsuang points out that their occurrence may in fact be related to a patient's social network and his personality, while Dohrenwend devalues recent stressful events and network factors, in comparison with class-related socialisation experiences in adverse family and other early environments. Like his countryman John Paul Jones, Dohrenwend refuses to haul down the flag, which in his case proclaims 'social stress'; however, the weight of evidence suggests that this ship is slowly sinking. What does seem to be generally agreed is that recent environmentally-induced stress is far less of a risk factor in schizophrenia than in major depression.

Expressed emotion inevitably causes some well-known material to be re-exhibited, but with such new comments as Angermeyer's that the effects of family intervention measures are in the opposite direction to that predicted by labelling theory. (What does Scheff think?) He also identifies the success of such intervention as being in the extent to which it modifies non-specific factors which are either stressors or moderators of social stress. Leff usefully makes clear that in schizophrenia, the association between EE and relapse is non-specific and cannot account for the particular form of the disorder.

In a magisterial summing-up, Häfner is optimistic that competing theories about schizophrenia need not be mutually exclusive, but could represent different aspects of the same central function. Although advances in genetics and in biological investigation seem most rapid and are securing most attention today, it might in fact be epidemiology – a tortoise rather than a hare – which really illuminates the fundamental nature of this protaean disorder. WHO's international studies increasingly suggest a close parallel between the distribution of schizophrenia and that of moderate–severe mental retardation, so that research effort in one field could well have significant overlap into the other. This volume, notwithstanding some problems of translation, is probably the most comprehensive single discussion of current ideas and developments in research on schizophrenia, and should be read by everyone with a serious interest in the subject.

HUGH FREEMAN, *Editor, British Journal of Psychiatry*

**An Introduction to Neuropathology.** By J. HUME ADAMS and D. GRAHAM. Edinburgh: Churchill Livingstone. 1988. 309 pp. £29.95.

This book is written for general pathologists, particularly those in training, and for clinicians interested in the neurological sciences. The authors' stated aim has been to convince general pathologists that a proper examination of the brain and spinal cord is a straightforward exercise, and to achieve their objective they have provided a well-illustrated section on post-mortem technique, valuable notes on the dissection of an infant's brain, a simplified description of the development of the central nervous system, and a section of applied neuroanatomy, all of which are very useful. Most welcome of all, however, is their insistence that in virtually all circumstances the brain should be fixed in formalin *before* its examination.

The meat of the neuropathology section is also wholesome, with detailed informative sections on vascular and hypoxic disorders (25 pages), cerebral trauma (18 pages), and cerebral oedema (12 pages), and a particularly interesting chapter devoted to the neuropathological effects of vitamin deficiencies and neurotoxins.

Almost inevitably however, a book of this size will have some weaknesses; in particular, there is virtually no mention of the neuropathology of epilepsy, even though the death of a patient in an epileptic fit is not an unknown problem in the working life of an autopsy pathologist. In addition, the chapter on 'Ageing and the dementias' (6 pages) is minute compared with others. This difference in emphasis obviously reflects the interests of the co-authors, but it also leads to some inbalance in an otherwise excellent volume.

The book can be highly recommended for its intended audience, but it is not so valuable for young psychiatrists training for their MRCPsych. They will find much more to their liking in the relevant chapters in Greenfield's *Neuropathology* or Shepherd's *Handbook of Psychiatry*.

C. J. BRUTON, *Neuropathologist, Department of Neuropathology, Runwell Hospital, Wickford, Essex*

**The Halfway House: On the Road to Independence.** By SYLVIA L. GOLOMB and ANDREA KOCSIS. New York: Brunner/Mazel. 1988. 244 pp. $30.00.

An authoritative source like the substantial volume of research reviews accompanying the recently published Wagner Report *Residential Care: A Positive Choice* (*Residential Care: The Research Reviewed.* HMSO, 1988) discloses – yet again, some might say – that, compared with other client groups such as the mentally handicapped or children in social need, the adult mentally ill are notably ill-served by the available literature. Golomb & Kocsis provide a useful addition: a clear and comprehensive 'state of the art' description of work in mental health hostels. The book occupies a territory between the literature on psychiatric rehabilitation and that on residential work, and may be recommended to the growing body of psychiatrists with clinical responsibilities in this area and also to their community psychiatric nurse, social work, and residential or day care colleagues.

The authors are social workers attached to the Futura House Foundation, New York. It gradually becomes manifest that although they write in generalisations they are mainly describing the practice of a particular institution. The social context is explicitly American, but their practice, as described in seven substantial chapters from intake through to aftercare, is very much in line with that of good quality British hostels. They are helpfully clear about their management of such familiar tight corners in residential work as clinical relapse, violence, suicide threats, and love affairs between residents.

The model in operation, which could with advantage have been more clearly and succinctly set out, provides for stays of, typically, 20–24 months for discharged in-patients or direct community admissions. Residents are out of the place, at day hospital or in employment, through the normal working week; they generally have therapeutic oversight (from psychiatrist, psychologist or social worker) elsewhere and will have given informed consent to the exchange of clinical information with the hostel; they will have a weekly session with a 'counsellor' (a residential care staff member) who is the "eye and ears of the social worker"; additionally, there are roles for the agency director (in periodic reviews) and, if necessary, other staff, including the consulting psychiatrist. The regime is fairly highly structured and staff-directed, but patients are expected to share the domestic chores, there is a weekly community meeting, and so forth. The ideology is one of encouraging the maximum individual autonomy, and the method focuses principally on "functional assessment in relation to environmental demands" – a level of behavioural analysis intermediate between the broader generalisation represented by a psychiatric diagnostic label and more detailed statements concerning individual psychopathology. An illustration is the description (in one of the numerous clinical vignettes which are an attractive feature of this book) of getting, in the space of three months, a 31-year-old woman with a 10-year history of schizophrenic disorder who was "worse than incompetent in the kitchen" to be able to cook a dinner for ten with "... comfort, competence and pride in her mastery".

This, then, is a useful training text; we can also see what it is not. It includes no evaluation; it is not comparative; and it is not as theoretically sophisticated or consistent as, for example, Jansen's *The Therapeutic Community* (Croom Helm, 1980). But such comments constitute as much a criticism of the contemporary state of residential theory and research as of this book; as such, they are also a prescription for the next decade of investigation in social therapeutics.

D. W. MILLARD, *Fellow of Green College, Oxford*

**Psychological, Neuropsychotic and Substance Abuse Aspects of AIDS.** Edited by T. PETER BRIDGE, ALLAN F. MIRSKY & FREDERICK K. GOODWIN. New York: Raven Press. 1988. 279 pp.

Perhaps in no other disease process is the concept of holism (as opposed to reductionism) so vital as in the understanding of AIDS. The purist might, however, argue that a single human immunodeficiency virus (HIV), at the very moment of possible infection, is subject to laws of quantum mechanics. He or she might assert that whether or not a person becomes infected is dependent on the interaction of the gp120 molecule of the virus coat and the CD4 sites of the macrophages and lymphocytes, which in itself depends on molecules and atomic interaction, which in turn may depend on the uncertain behaviour of electrons or their leptons.

This book contains 23 chapters on a wide variety of AIDS-related issues, and is edited by three distinguished members of the National Institute of Mental Health in Bethesda, Maryland. Many of the authors are household names in the psychoneuroimmunology field.

Some of the chapters seem at first to have little bearing on AIDS and HIV disease. They discuss various neuroreceptors (e.g. transferrin, insulin, *raf* proto-oncogenes) in different brain sites. It is a little difficult to understand the relevance of 'Acetylcholine reception and the rabies virus' to this book's subject. Yet another chapter is devoted to the theoretical use of event-related brain potentials in HIV disease.

There are a number of chapters on psychological aspects of AIDS and the immune system, with a fascinating and relevant chapter on Voodoo, stress, and AIDS. Other chapters are devoted to the effects of nitrites on HIV disease, the effects of various drugs of addiction and alcohol on HIV progression, and a thought-provoking chapter on the psychoimmunoneurology of HIV disease. The short chapter on neuropsychological testing of HIV does not discuss the other much larger studies on this topic that were presented as long as two years ago at the international AIDS conference.

Finally, there are chapters on classical conditioning and immunomodulation, and on stress, life events and types of behaviour that put people at risk of HIV disease.

This book is on the whole well written and exciting. All psychiatrists should read it.

DAVID GOLDMEIER, *Consultant Venereologist, St Mary's Hospital, London*

**Facts, Fallacies and Frauds in Psychology.** By ANDREW M. COLMAN. London: Hutchinson Education. 1988. 224 pp. £6.95.

As a change from an edited book of papers by other people, Colman has selected seven contentious areas in psychology to discuss himself. The benefit of a single author is in the continuity of style, but the debit is that the attempt to cover an exceptionally wide canvas is inevitably touched by his personal outlook. Progressing through the book, one guesses more and more accurately which perspective he will take on his next subject, his overall view being somewhat left of liberal.

For example, Colman begins with a clear view of the complex ideas involved in intelligence tests, but is fashionably against their use. In fact, he describes the 11 Plus exam as more divisive than social class or money, and "a notorious use of psychology". Of course, Cyril Burt is said to be a scoundrel and much of the evidence of intellectual differences between individuals "mere superstition". Having spent two chapters discussing IQ and its relationship to race, he ends lamely that we can only "suspend judgement". In support of this non-conclusion, it is argued that non-verbal and verbal intelligence tests are equally culture-bound, which is why American black children do less well than white children on both kinds. Colman makes a few disconcerting mistakes, such as calling the Ravens Progressive Matrices an IQ test, thus missing its point as a percentile ordered test of logical thinking.

The book is particularly frustrating to read because the author does not come clean about where he stands. He uses the academic ploy of apparently balanced argument to present his selected references, but baulks at drawing each chapter together, either in a way which could provide practical pointers, or even to a succinct conclusion. However, he does occasionally offer shyly, "My own view, for what it is worth . . .".

On anorexia nervosa and bulimia, Colman argues that depression is brought about by them, but not that it forms the basis of the eating disorder. Although he outlines the theory that the current urge to slimness underlies the disease, he recognises its existence in earlier times, and "the question remains open". You know before you read the chapter on ESP that he will not accept any evidence for it, but in his balanced way, he says that one day it may be proved to exist. Yet he does accept that hypnosis works, and describes vividly how he has seen it in action.

Perhaps the task of presenting dispassionate evidence in a authoritative manner, and in just a chapter apiece on subjects bubbling with intellectual friction, is simply too much to ask of any mortal.

JOAN FREEMAN, *Department of Education, University of Manchester*

**Physical Treatments in Psychiatry.** By L. G. KILOH, J. S. SMITH and G. F. JOHNSON. Oxford: Blackwell Scientific Publications. 1988. 490 pp. £49.50.

Physical treatment in psychiatry has had only a small share of the written word. Most textbooks say little about the problems which clinicians really face, and the more numerous reviews of published work need much skill in preparation to maintain interest. This work deals with the common and important treatments used in psychiatry today, and the authors set their limits early, enhancing the value of the work both in emphasis and for reference.

The book is divided into six sections. Four of these are extensive and cover ECT, psychopharmacology, psychosurgery, and medico-legal matters. A surprisingly short chapter deals with questionable treatments, and few nowadays will object to the applied epithet 'dubious'. The information in each section is practical, detailed, and well supported by copious but unobtrusive documentation in the style of a review. The text is generous with common experience, lending a sense of authority and common sense. Despite the considerable range of topics, interest never dwindles, and for its size the book is easy and enjoyable to read. Inevitably there are a few controversial points.

After a stimulating foreword by Sir Martin Roth, there is an absorbing account of the historical background; a scene to reflect on when trivial conflicts over present-day methods of treatment generate political sway. This aspect is maintained throughout the work, as each main section has its own historical prelude. The chapter on psychotropic drugs is divided into subsections which cover the important current issues, and for each drug group an outline of pharmacokinetics is followed by a clear description of their current use in clearly defined illness categories.

The section on ECT is outstanding, presenting a cogent review of practical issues and research findings relevant to modern practice. Areas such as electrode placement, duration of current, modification, premedication, relaxation, neurobiological effects, and mode of action precede a discussion on simulated treatment, a full account of indications in specific conditions, and recommendations for procedure. Similarly, psychosurgery is treated thoroughly and carefully, revealing a rich source of interesting information and giving the impression, repeatedly felt while reading this book, that the authors have searched well for additional facts, viewed them in a fresh light and presented them in a novel way.

The chapter on legal considerations is, at first glance, aberrant, an impression quickly dispelled by its content. There is an interesting account of the evolution of the process of patient consent to treatment, and a well-researched history of the gradual increase in constraint to the use of physical treatment. This chapter illuminates in an indirect and uncontrived way the aim of the book, fully met, which emphasises the importance when appropriate of knowing the physical treatments well, choosing the appropriate measure, explaining to the patient, and gaining proper consent.

This book is warmly recommended as a sound classical guide to modern effective physical treatment. The presentation and finish complement the worthy contents to make the price reasonable by today's standards.

JOHN POLLITT, *Honorary Consulting Physician in Psychological Medicine, St Thomas' Hospital, London*

**Treating Chronically Mentally Ill Women.** Edited by LEONA L. BACHRACH and CAROL C. NADELSON. Washington: American Psychiatric Press. 1988. 184 pp. £9.95.

Hearing throughout this book recurrent echoes of the feminist movement, your reviewer felt he was getting something of a hard sell. Most readers are likely to be sympathetic to the view that "gender role stereotypes permeate all areas of our lives" and need to be challenged. But not all will be convinced that the relentless pursuit of the "gender differences in patient careers" is finally a constructive exercise. Both male and female long-stay patients have so many unsolved problems in common that emphasis on the special needs of women may well risk the wider thrust of reform.

Yet this is an attractively produced book, and it has a number of important things to say about mentally ill women and their care. For example, in the USA, women constitute nearly two-thirds of the chronically mentally ill; they are said to have a later onset of schizophrenia and require smaller doses of neuroleptics in early adult life; and it is suggested that the roles of oestrogen and brain laterality play a part in gender differences in the major psychoses. The so-called 'greying of America' is also mentioned – i.e. the increasing number of elderly with disproportionately more women – and this phenomenon is already causing problems in other countries.

Some unhappy results of 'deinstitutionalisation' and 'admission diversion' are discussed and illustrated with examples. The all-too-familiar inadequacy of community resources is highlighted, and there is criticism of services marked by excessive regulation and rigidity which therefore fail to meet the needs of those mentally ill women who are pregnant, suffer from physical disabilities, or abuse drugs or alcohol.

This book, then, provides a worthwhile survey of the service needs of chronically mentally ill women and will not be read by male psychiatrists without an occasional stab of guilt. Unfortunately, some of the writing tends to be turgid and jargon-ridden. There are impressive lists of references.

J. K. W. MORRICE, *Honorary Fellow, Department of Mental Health, Aberdeen University.*

**Diagnostic Issues in Anorexia Nervosa and Bulimia Nervosa.** Edited by DAVID M. GARNER and PAUL E. GARFINKEL. New York: Brunner/Mazel. 1988. 228 pp. $25.00.

Anyone who has attempted research into eating disorders will be aware of the difficulties of diagnosis or classification of these problems, particularly for bulimia, which at one end of the spectrum merges with anorexia and at the other becomes similar to compulsive eating in obesity. A volume which addresses these and other diagnostic issues is therefore welcome, and Garner and Garfinkel, themselves eminent in the field, have put together a useful selection of papers. Russell begins with a discussion of bulimia nervosa as a diagnostic entity, pointing out the limitations of classifications based on symptomatology alone and the difficulty of applying a strict dividing line between anorexia and bulimia. The next chapter briefly reviews the thinking behind the recent revision to DSM–III criteria for bulimia, before Fairburn and Garner's two chapters which stress the central role of attitude to shape and weight and go on to argue that anorexia should be distinguished from bulimia on the basis of whether there is a complete restriction of eating, rather than the extent of weight loss which results. The remaining three chapters review the links between depression and eating disorders, the influence of personality factors and the occurrence of anorexia and bulimia nervosa in males. Finally, there are useful appendices which detail the diagnostic criteria which have been proposed by various authors and bodies over the years.

At the end of this fairly short book, questions still remain about the most useful way to classify individuals with eating problems. However, one at least has the sense of being clear about the issues involved, the definitions proposed to date, and the potential value of greater unanimity in the field of diagnosis.

KEN GORDON, *Top Grade Psychologist, Winchester Health Authority*

**The Psychobiology of Bulimia.** Edited by JAMES L. HUDSON and H. G. POPE. Washington: American Psychiatric Press. 1987. 267 pp. £15.00.

**Medical Aspects of Anorexia Nervosa.** By S. BHANJI and D. MATTINGLY. London: John Wright. 1988. 150 pp. £22.00.

Although the editors of *The Psychobiology of Bulimia* have a strong reputation for views about the links between bulimia and depression and the use of antidepressants, I was impressed by the lack of polemics in this review of the biological factors in bulimia and by the individual authors' refreshing frankness about the limitations of their hypotheses. I found the chapters to be well written and easy to read. The book covers its title subject well, and in 14 chapters gives a balanced view of the present state of knowledge. This includes a review of abnormalities of neurotransmitter function, endocrine changes, and metabolic disturbance. Contrasts are drawn between bulimia and anorexia nervosa, depressive disorders, seasonal affective disorders, and anxiety states.

Searching for criticisms of this book, I would perhaps have to comment on its concentration on DSM–III bulimia, with no contrast drawn with bulimia nervosa. In addition, the book completely ignores social and psychological aspects of bulimia, although admittedly such factors are outside the scope of the title.

In contrast, *Medical Aspects of Anorexia Nervosa* is a book which tends to stray from its title. The central nine chapters can be applauded for covering the medical findings in anorexia nervosa with a detailed and complete review of the literature, and with the authors' study of their own series of 155 cases providing continuity between chapters. Unfortunately, I felt that the initial chapters on the history, aetiology and clinical features of anorexia nervosa were rather superficial, and seemed to be written for the sake of completeness.

This book is concluded by chapters covering the management and prognosis of anorexia nervosa, and one chapter on bulimia nervosa. Here again there is a tendency towards superficiality and over-simplification. The chapter on psychiatric management was rudimentary, and that on medical management restricted itself to pharmacology, tube feeding and total parenteral nutrition. Information on oral food supplements and dietetic approaches were sadly absent. The authors included a chapter on their own management regime, which consisted of liberal nursing together with neuroleptics and low dose insulin injections. Although I would not criticise this approach, I would not like a reader of this book to be left with the idea that this is the treatment choice of most centres.

Taken as a whole I enjoyed this book, but at £22.00 it seems expensive.

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**Location and Stigma: Contemporary Perspectives on Mental Health and Mental Health Care.** Edited by CHRISTOPHER J. SMITH and JOHN A. GIGGS. Boston: Unwin Hyman Ltd. 1988. 331 pp. £35.00.

It may appear strange that a psychiatrist should review a book edited by two geographers. Two other members of geography departments and five scholars in urban and regional studies have joined with six contributors to this volume representing social policy and finally three mental health professionals. The result is a historical and contemporary account of the development of institutional and community services for the mentally ill on both sides of the Atlantic. Numerous and largely unsuccessful attempts by society to cope with the challenge of the long-term mentally ill are presented dispassionately. The result is a convincing account of a world in which medicine has had a remarkably minor role.

The first section concerns the development and dissolution of the asylum era. Financial aspects are particularly well detailed, and the generosity of our 19th century forebears will come as a surprise to those new to the subject. The second section begins with the somewhat misleading title 'Some clues about aetiology . . .'. However, the chapter by Giggs is a compelling argument for the inclusion of the geographic or 'spatial' perspective in studying the incidence of mental illness: a helpful introduction to the subject for the student of psychiatric epidemiology. The third and fourth sections take the reader into the cities and towns where the formerly institutionalised, long-term mentally ill are to be found in increasing numbers. Two important contemporary myths are brought into question. The idea that property values suffer when patients are rehoused in a residential neighbourhood is shown to be largely unfounded. Recent research is quoted to refute the idea that the rising tide of homelessness in the United States is due entirely to the closure of state mental hospitals. The economic policies of the Reagan Presidency are condemned. Evidence indicates that the majority of the new urban homeless are simply poor victims of a society that has virtually abandoned the civilised safety net of a social welfare and insurance system.

Readers who are not familiar with political, social, and economic theory will find this a demanding but nevertheless rewarding collection. It is not flawless, but it does gather together a body of writing that is pertinent to the role of psychiatry in our society today and as such deserves careful, critical attention.

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**Chronobiology and Psychiatric Disorders.** Edited by ANGELOS HALARIS. Amsterdam: Elsevier. 1987. 272 pp. $49.50. DM135.

Movements of flowers and plants in response to fluctuations in daylight have been noticed ever since the 5th century BC. The movement of plants guided by an internal clock was discovered more recently. In 1960 Aschoff could confirm the existence of a circadian clock functioning without external time cues in volunteers who were living in underground caves for several days.

Considering the title, one might expect a description of the chronobiological aspects of at least the major psychiatric disorders. Rather disappointingly, only circadian rhythms in normal persons and in patients with affective disorders are described. Most of the book is devoted to the disturbances in circadian rhythms in depressive patients, as reflected in the REM sleep, temperature regulation, neurotransmitters, etc. The most interesting chapter is 'What is wrong with circadian clocks in depression?' by Detlev von Zerssen. According to this, the circadian pacemaker is well preserved in depression. In another interesting chapter entitled 'Infradian rhythms and affective disorders', chronobiology is described as more than merely the circadian rhythms.

This is a valuable book; it has a fund of information on research on the chronobiology of mood disorders.

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British Journal of Psychiatry (1989), 154, 147-169 **Review Article**

# The Gilles de la Tourette Syndrome: the Current Status

MARY M. ROBERTSON

The Gilles de la Tourette Syndrome is a movement disorder characterised by both motor and vocal (phonic) tics. It was once thought to be rare, and the literature until the 1970s consisted predominantly of case reports, both highlighting the fascinating clinical manifestations and speculating as to their aetiology. Many areas of GTS are under investigation, including the neurology, psychopathology, neurophysiology, biochemistry, and genetics. This review briefly considers early descriptions of GTS as well as current research, highlighting the areas of agreement and controversy.

The generally accepted diagnostic criteria for Gilles de la Tourette syndrome (GTS) are those included in DSM-III-R of the American Psychiatric Association (1987), and are as follows.

(a) Both multiple motor and one or more vocal tics have been present at some time during the illness, although not necessarily concurrently.
(b) The tics occur many times a day (usually in bouts), nearly every day or intermittently throughout a period of more than one year.
(c) The anatomical location, number and frequency complexity and severity of the tics change over time.
(d) Onset is before the age of 21.
(e) Symptoms do not occur exclusively during psychoactive substance intoxication or known central nervous system disease, such as Huntington's chorea and post-viral encephalitis.

## History

The first clear medical description of GTS was made in 1825, when Itard reported the case of a French noblewoman, the Marquise de Dampierre, who developed symptoms of GTS at the age of seven, and who, because of the socially unacceptable nature of her vocalisations, was compelled to live as a recluse until she died at the age of 85. Georges Gilles de la Tourette (1885) described nine cases of GTS, emphasising the triad of multiple tics, coprolalia and echolalia. At about the same time a variety of illnesses, now sometimes referred to as 'culture-bound syndromes', were described. Thus, Beard (1886) reported on the "jumping Frenchmen" of Maine, and *latah* was described in Malaysia (O'Brien, 1883), with *myriatchit* (Hammond, 1884) being the Russian equivalent. The symptoms of these conditions include myoclonic movements, echophenomena and, in the case of *latah*, coprolalia; they differ from those of GTS in that they occur predominantly in adulthood and are startle reactions, whereas in GTS, the phenomena are spontaneous and commence during childhood or adolescence. More recently Saint-Hilaire *et al* (1986) reviewed the literature and reported eight jumpers from the Beunce region of Quebec, bordering directly on Maine, in six of whom the onset of jumping coincided with the start of work as a lumberjack; interestingly, in three, there was a positive family history of jumping which totalled 11 relatives. Saint-Hilaire and colleagues emphasise the startle reaction and suggest that the phenomenon can be explained in psychological terms as operant-conditioned behaviour.

The first reported case of GTS in the UK may possibly have been Mary Hall of Gadsden, who was reported in 1663 by William Drage (Lees *et al*, 1984), while it has also been convincingly speculated that Dr Samuel Johnson, the prominent 18th-century literary figure, was also afflicted (McHenry, 1967; Murray, 1979). Miss Lucy Porter told James Boswell (1867) that when Johnson "was introduced to her mother, his appearance was very forbidding; . . . he often had, seemingly, convulsive starts and odd gesticulations, which tended at once surprise and ridicule". Another early case was one suggested by Stevens (1971), who noted that it "affected Prince de Conde who was compelled to stuff his mouth with any nearby object, including a curtain to suppress an involuntary bark in the presence of Louis XIV". Shapiro *et al* (1978) trace the history of GTS, noting that between 1885 and 1965 only about 50 cases were described in the literature. They divide the history into several periods, with dominating themes including those emphasising pathogenesis, such as "neuropathic heredity", to predominantly treatment eras, spanning psychoanalysis, behavioural techniques and chemotherapy.

The life and times of Georges Albert Edouard Brutus Gilles de la Tourette (1857-1904) have been eloquently documented by Lees (1986). His most substantial achievements were in the study of hysteria and hypnosis, but he was also an able neuropsychiatrist. One of Charcot's favourite pupils, he was shot in the back of the neck by a deluded woman who had been a patient at the Salpêtriere in 1893, but he made a complete recovery and finally died in Switzerland, suffering from general paralysis of the insane.

### Prevalence

The exact prevalence of GTS is unknown; a currently accepted figure is 0.5 per thousand (approximately 110 000 patients in the USA) (Bruun, 1984), but even this may now prove to be an underestimate.

The disorder was once thought to be a rarity, but is now being more widely recognised and diagnosed. For example, in an international registry published in 1973 (Abuzzahab & Anderson), only 174 patients were identified in the USA, and 53 in the UK. There are many reasons for the exact numbers being unknown, including misdiagnosis and the reluctance of relatives to divulge family histories, as suggested by the case reports of Hajal & Leach (1981). The apparent increase in the number of patients may be partly explained by the fact that cases now being diagnosed tend to be those with milder symptoms, and no longer considered bizarre medical curiosities, with their symptoms often undetected by acquaintances (Bruun, 1984). The prevalence data are further complicated by the fact that there have been only a few epidemiological studies, which have revealed conflicting data.

Thus, one investigation (Lucas *et al*, 1982), from Rochester, Minnesota, conducted over a period of 12 years, suggested that the incidence was 4.6 per million per year, with a prevalence rate of 0.05 per 10 000. Burd *et al* (1986) estimated the prevalence of GTS in North Dakota to be 0.22 per 10 000 for women, and 0.77 per 10 000 for men, whereas the prevalence rate for girls was 1.0 per 10 000 and for boys 9.3 per 10 000. Several suggestions for the disparity in prevalence between children and adults were made, including both the underdiagnosis in adults, and the quiescence of symptoms in adulthood. Other recent findings (Kurlan *et al*, 1987) also suggest that many cases of GTS are mild and do not come to medical attention, providing another reason for the exact prevalence of the disorder being unknown.

A recent and comprehensive study (Caine *et al*, 1988) examined the prevalence of GTS in the schools of Monroe County, New York. Patients were recruited from physicians, other health professionals, and school personnel and via wide coverage in local news media. Among the 142 636 pupils enrolled in the county's public and private schools at the time of the investigation, 41 (of whom 37 were male) with GTS were detected, i.e. almost double the previously estimated prevalence of 28.7 per 100 000. Of these, 20 had obsessive–compulsive symptoms, but only three had a disabling diagnosable disorder. It is noteworthy that only 18 individuals with GTS required pharmacological intervention, and for most it was a mild disorder requiring no treatment. It must be stressed that all but one of the children with disabling behaviour disorders were referred by professionals. In contrast, 16 of the 17 who originated from non-clinician sources exhibited no social maladjustment or behaviour problems; neither did this group have tics severe enough to warrant medication.

In conclusion, the exact prevalence of GTS is unknown, and currently accepted figures are almost certainly underestimates.

### Epidemiology

GTS is found in all cultures and racial groups, but is rare among the American black population, which has been represented in varying, but small, proportions in a number of studies: 0.5% (Shapiro *et al*, 1978), 1.8% (Comings & Comings, 1985), 3% (Erenberg *et al*, 1986), and 8.7% (Golden, 1984). Most large reports have come from the USA (Shapiro *et al*, 1978; Nee *et al*, 1980; Kidd *et al*, 1980; Jagger *et al*, 1982; Golden, 1984; Comings *et al*, 1984*a*), but a significant number of patients have also been reported from the Soviet Union (Morkovin *et al*, 1986; Pushkov, 1986; Schelkunov *et al*, 1986), the UK (Robertson *et al*, 1988), Japan (Kondo & Nomura, 1982; Nomura & Segawa, 1982), Germany (Abuzzahab & Anderson, 1973; Asam, 1982), the Netherlands (Van de Wetering *et al*, 1988), Denmark (Regeur *et al*, 1986), Korea (Min & Lee, 1986), and China (Lieh Mak *et al*, 1982). These substantial studies, plus case reports from Ceylon (Nada Raja, 1970), Puerto Rico (Joy-Sobrino *et al*, 1985), India (Chakraborty, 1960; Prabhakaran, 1970), Australia (Ellison, 1964), New Zealand (Shenken, 1984), Canada (Moldofsky *et al*, 1974; Gonce & Barbeau, 1977; Joschko & Rourke, 1982) and Saudi Arabia (El-Assra, 1987), highlight the worldwide distribution of the disorder.

Some studies have found an unexpectedly large proportion of their GTS subjects having an Eastern European/Ashkenazim-Jewish background (Eldridge *et al*, 1977; Shapiro *et al*, 1978; Wassman *et al*, 1978), although this notion has not been supported by other investigators (Moldofsky *et al*, 1974; Erenberg & Rothner, 1978; Nee *et al*, 1980; Golden & Hood, 1982; Lucas *et al*, 1982; Nomura & Segawa, 1982; Lees *et al*, 1984; Comings & Comings, 1985; Erenberg *et al*, 1986; Robertson *et al*, 1988). It should be borne in mind that two of the three studies reporting such a preponderance were from metropolitan New York (Eldridge *et al*, 1977; Shapiro *et al*, 1978), which has a large Jewish population, and thus their findings possibly represent referral bias. The genetic contribution, however, cannot be discounted (see below).

### Demography

The majority of studies and reviews agree that GTS occurs three to four times more commonly in males than in females (Kelman, 1965; Fernando, 1967; Corbett *et al*, 1969; Moldofsky *et al*, 1974; Shapiro *et al*, 1978; Jagger *et al*, 1982; Yaryura-Tobias & Neziroglu, 1983; Golden, 1984; Regeur *et al*, 1986; Robertson *et al*, 1988; Van de Wetering *et al*, 1988). The syndrome is found in all social classes (Gilles de la Tourette, 1885; Moldofsky *et al*, 1974; Shapiro *et al*, 1978; Nee *et al*, 1980), although the last two groups found a clustering in social class 3. Asam (1982) and Robertson *et al* (1988) reported respectively that 63% of 16 GTS patients and 61% of 59 (classified according to the Registrar General's classification) failed to attain their parental social class. This suggests that patients with GTS may well underachieve socially. Shapiro & Shapiro (1982*a*) state that there is no evidence that any of the following demographic or illness-related variables significantly differentiate patients with GTS from normal control individuals: parents' age at time of the patient's birth, birth weight, birth order, history of abortions, perinatal complications, patients' medical history or family medical history. Other studies, however, reported possible birth complications in 25% (Lees *et al*, 1984) and 40% (Lucas *et al*, 1982) of their samples.

### Clinical characteristics

The clinical characteristics of patients with GTS seem independent of culture, as they occur with some degree of uniformity irrespective of the country of origin. The account given below is based on information derived from a variety of different sources, taken from studies from the various countries which have documented substantial numbers of patients, including the USA (Shapiro *et al*, 1978; Jagger *et al*, 1982; Shapiro & Shapiro, 1982*a*; Comings & Comings, 1985), the UK (Lees *et al*, 1984; Robertson *et al*, 1988), Denmark and the Netherlands (Regeur *et al*, 1986; Van de Wetering *et al*, 1988).

The age of onset of symptoms ranges from two to 15 years, with a mean of seven years being most commonly reported. By the age of 11, symptoms have appeared in 96% of GTS patients, the most frequent initial symptoms being tics involving the eyes in 38–59% of cases; for example, eye-blinking was found as the most common initial symptom in 36% of cases in one series (Lees *et al*, 1984) and 48% of another (Comings & Comings, 1985). Other common presenting symptoms are tics of the head and face. Vocalisations have been reported as initial symptoms in some 12–37% of subjects, of which the most frequent was repeated throat-clearing (Comings & Comings, 1985; Regeur *et al*, 1986). Coprolalia (the uttering of obscenities) occurs as the presenting symptom in 2–6% of patients, while mouth-opening was the presenting symptom in 7.6% in one large series (Comings & Comings, 1985). Cumulative lifetime symptoms include tics of the face (94–97%), head, neck and shoulder (89–92%), upper arms (51–81%), legs (40–55%) and body (41–54%). Comings & Comings (1985) found the most characteristic tic of the head and neck was a 'hair-out-of-the-eyes' tic. Licking as a motor tic is exhibited by some 20% of patients (Regeur *et al*, 1986), while spitting is found in 9% (Robertson *et al*, 1988).

Although often referred to as a tic disorder, patients with GTS usually demonstrate a variety of complicated movements. The most frequent include touching (38–61%), hitting or striking (35–36%), jumping (28%), smelling of the hands (12%), smelling objects (11·%), stamping (9%), squatting (7%), and a variety of complexities of gait, such as retracing steps (5%), twirling (5%) and deep knee bends (4%). Complicated movements are the presenting symptoms in some 7–11% of patients. In one study, 61% of subjects had complex hand movements, and 27% complex foot movements (Caine *et al*, 1988).

The onset of vocalisations is usually later than that of the motor tics, with a mean age of onset of 11, with grunting, coughing, throat-clearing, barking, snorting, explosive noises, screaming, word accentuation, humming, hissing, clicking, colloquial emotional exclamations, low- and high-pitched noises and inarticulate sounds being the usual utterances. Robertson *et al* (1988) reported that the mean cumulative number of vocalisations in their cohort of 90 was 4.8 per person.

Coprolalia (for the purpose of this review, taken to mean the involuntary inappropriate uttering of obscenities as used by Gilles de la Tourette in 1885) has been reported as occurring in 58–60% of patients in the USA (Nee *et al*, 1980; Shapiro & Shapiro, 1982*a*), but in only a third of UK patients (Robertson *et al*, 1988), 36% of Dutch patients (Van de Wetering *et al*, 1988), 26% of Danish patients (Regeur *et al*, 1986) and only 4% of Japanese patients (Nomura & Segawa, 1982). This may partly reflect cultural differences, although it has been pointed out (Shapiro & Shapiro, 1982*b*) that as milder GTS cases have been diagnosed and treated, the overall reported prevalence of coprolalia has fallen from 60% to 33%. Indeed, in recent reports from the USA (Comings & Comings, 1985; Shapiro & Shapiro, 1986), coprolalia was present in only 34–37% of patients, but occurred significantly more in females (Comings & Comings, 1985). Others from the USA have noted that coprophenomena are infrequent in certain GTS patients from middle-class and strict religious backgrounds (Butler, 1984). Another report of 200 GTS children found only 8% to have coprolalia; in addition, coprolalia was more frequent in those with moderate or severe GTS symptoms (Erenberg *et al*, 1986). Coprolalia usually has a mean age of onset of 13–14.5 years, and later disappears in up to a third of patients. Copropraxia (involuntary and inappropriate obscene gestures) was reported in 18–21% of the UK samples, the commonest gesture being the palm-backed V sign (Lees *et al*, 1984; Robertson *et al*, 1988), 8% of a Dutch cohort (Van de Wetering *et al*, 1988), 3% of a USA sample (Comings & Comings, 1985) and 1% of a Danish GTS population (Regeur *et al*, 1986). Echolalia (imitation of sounds or words) varies from 20% to 44% of patients, while echopraxia (imitation of actions) varies from 11% to 35% of patients. Palilalia (the repetition by the patient of the last word or phrase in a sentence or last syllable of a word) occurs in 6–15% of GTS patients.

Abuzzahab & Anderson (1973) reported some significant cross-cultural symptom differences between France, Italy, the UK and the USA, such as fewer eye and neck tics and more echokinesis in France; more eye tics in Italy; less echophenomena in the UK; and more neck tics, coprolalia and a younger age of onset in the USA. The German sample, on the other hand, did not differ significantly from any of the others. Many of these differences, however, have not been replicated in later studies (Shapiro *et al*, 1978; Shapiro & Shapiro, 1982*a*; Lees *et al*, 1984). Spontaneous remissions have been reported in 3.3% of 14 patients in a six-month follow-up study (Abuzzahab & Anderson, 1973) and in 5% of 80 patients followed for an average of 2.9 years (Shapiro *et al*, 1978).

Tics and vocalisations are invariably aggravated by anxiety, stress, boredom, fatigue, and excitement, while sleep, alcohol, orgasm, fever, relaxation, or concentrating on an enjoyable task usually lead to temporary disappearance of symptoms. Stress is often mentioned as a precipitating factor at the onset of the illness, and although no acute factors are obvious in the majority of patients, chronic stress is present in some individuals (Eisenberg *et al*, 1959; Stevens, 1964; Faux, 1966). Characteristically, the course of the syndrome over the person's lifetime is punctuated by the appearance of new tics and the disappearance of older ones. It is well known that stimulants such as methylphenidate (Golden, 1977; Pollack *et al*, 1977; Lowe *et al*, 1982) precipitate or exacerbate GTS symptoms. In fact, in one survey (Golden, 1977) of 88 patients with GTS, 32 reported 41 periods of exposure to central nervous system stimulants such as methylphenidate, dextroamphetamine, imipramine, chlorphenetramine and metamphetamine. Another investigation (Erenberg *et al*, 1986) found 48 of 200 GTS patients to have received stimulant drugs: nine had been treated before the onset of tics, while in the 39 with pre-existing tics, stimulants had exacerbated tics in 11, had no effect in 26, and decreased tics in two; behaviour, however, improved in 22, of whom 13 showed no increase in tics. Recently it has been reported that sympathomimetic agents such as phenylephrine hydrochloride, and antihistamines such as diphenhydramine (Benadryl), also intensify GTS symptoms (Shafii, 1986).

It was once thought that movements disappeared during sleep, but latterly this has been shown not to be the case (Glaze *et al*, 1982; Incagnoli & Kane, 1983). It has been noted that tics of the eyes, face and head are often quite persistent and remain the most refractory to pharmacological interventions (Leckman & Cohen, 1983). It has been pointed out that an area of confusion for parents, teachers and some physicians is the idea that GTS is a so-called 'involuntary' disorder of movement, and yet the patients are able to suppress symptoms during an interview or while involved in certain tasks, for example while at school or playing sport (Butler, 1984).

## Associated features

Many types of behaviour have been reported to occur frequently in patients with GTS. It is important to acknowledge at the onset that in the author's view some types of behaviour such as obsessive-compulsive disorder are intimately linked to GTS (*see below*) and are probably an *integral* part of the syndrome. Other disturbance such as hyperactivity, attention deficit disorder and learning disabilities occur in a substantial proportion of patients and are often the symptoms for which the patient is referred to a physician.

Other documented associated features are self-injury, noted both in case reports (Eisenberg *et al*, 1959; Eldridge *et al*, 1977; Lowe *et al*, 1982; Sandyk, 1986) and in significant percentages of patient populations, such as 13% (Comings & Comings, 1985), 20% (Regeur *et al*, 1986), 29% (Jagger *et al*, 1982), 30% (Van de Wetering *et al*, 1988), 33% (Robertson *et al*, 1988, 1989), 34% (Stefl, 1984), 43% (Van Woert *et al*, 1976), 48% (Nee *et al*, 1980) and 53% (Moldofsky *et al*, 1974). Antisocial behaviour (Nee *et al*, 1980; Stefl, 1984) and inappropriate sexual activity (Moldofsky *et al*, 1974; Nee *et al*, 1980; Robertson *et al*, 1988) also occur, as does exhibitionism, in 6% of females and 16% of males (Comings & Comings, 1985). Aggressive behaviour has been reported in patients with GTS (Corbett *et al*, 1969; Moldofsky *et al*, 1974; Yaryura-Tobias *et al*, 1981; Stefl, 1984), for example in proportions as high as 21% of one sample (Van de Wetering *et al*, 1988), and 31% of another (Robertson *et al*, 1988). Comings & Comings (1985) noted that discipline problems occur in 41% of females and 45% of males, being one of the main recurrent themes elicited when interviewing GTS families. These authors also found anger and violence common in GTS (42%), with similar frequency in males and females. In 22% of the sample the violence did not result in destruction of property or physical attacks on other persons, while in 19% there was destruction of property, injury of people or killing of animals, and in 1% the violence resulted in legal problems. Those patients who were hyperactive demonstrated more violence.

It would be prudent to address the question as to whether or not the range of antisocial behaviour described is truly increased in GTS. From the author's experience in both clinical (Robertson *et al*, 1988) and family-pedigree (Robertson *et al*, in preparation) settings, and from the data of epidemiological surveys (Caine *et al*, 1988), it would seem that relatively few GTS subjects in the community exhibit antisocial behaviour, and that the documenta-tion of such behaviour may therefore reflect an artefact of referral, as the more severe GTS patients with problems are more likely to be referred to specialist centres.

It is generally accepted that many children who progress to GTS first manifest various behavioural disturbances often labelled minimal brain dysfunction, hyperactivity or attention deficit disorder (Shapiro *et al*, 1973). Attention deficit disorder was found in 13% of one small series (Lieh Mak *et al*, 1982), and 35% of a large series (Erenberg *et al*, 1986), while attention deficit disorder associated with hyperactivity has been reported in 36% (Van de Wetering *et al*, 1988) and 54% (Comings & Comings, 1985) of other large series. Hyperactivity alone has been noted in 67% (Moldofsky *et al*, 1974) and 73% (Stefl, 1984) of GTS subjects. Others (Van de Wetering *et al*, 1988) found disturbed concentration alone in 59%, and learning difficulties in 47% of their sample. What is important to note is that the behavioural symptoms of GTS are subject to the same waxing and waning as the motor and vocal symptoms, and can even persist after the characteristic tics and sounds have largely disappeared (Leckman & Cohen, 1983).

In a seven-part series of papers, Comings & Comings (1987*a*) presented their data on the associated features of GTS, including attention deficit disorder, learning disorders, school problems, conduct disorder, schizoid behaviours, sleep problems, and affective disorder. They compared 246 patients with GTS, 47 random normal controls, 17 patients with attention deficit disorder (ADD) and 15 with "ADD secondary to a GTS gene" (Comings & Comings, 1987*a*), using a locally devised 425-item questionnaire based on the Diagnostic Interview Schedule and the DSM-III. All patients and/or their parents completed the questionnaire before the patients were seen. In brief, it was found that GTS patients were significantly different from controls for symptoms of inattention, impulsivity, hyperactivity, a variety of conduct disorders (lying, stealing, starting fires, vandalism, fighting, aggression, short temper, problems with drugs and alcohol), and schizoid symptoms (thinking that people were looking at them or plotting against them, and having hallucinations).

At this juncture it must be stated that the majority of Comings & Comings' findings and suggestions are not in accordance with the current literature on GTS (Pauls *et al*, 1988; *vide supra* and *infra*), or the opinions of several specialists in the field who met in 1987 in Washington DC at a workshop to discuss GTS and associated behaviour (personal communication).

In order to view the associated features of GTS in perspective, it should be emphasised again that all the cases documented are those who have been referred to physicians and therefore may be subject to ascertainment bias. In this context it should be noted that Minderaa *et al* (1988) found that 12 out of 50 (24%) children with GTS were referred to their clinic for reasons other than simple motor or vocal tics, examples of the reasons being conduct and/or learning disorders, sleep disturbances, stuttering, hyperactivity and/or difficulty with interpersonal relationships. The only epidemiological study to report on the frequency of symptoms is that of Caine *et al* (1988), who found coprolalia in 22% of patients, attention deficit disorder with hyperactivity in 27%, learning disabilities in 24%, and self-injurious behaviour in 17%. It should be reiterated that all but one of the children with disabling behaviour disorders were referred to the investigators (Caine *et al*, 1988) by treating professionals, and that for most other individuals (i.e. referred by media), GTS was a mild disorder. Of interest is that none of the patients in this epidemiological study had a vocalisation as their first tic.

Sleep disturbances in GTS subjects are common and the account below is based on the following authors: Moldofsky *et al* (1974), Nee *et al* (1980), Hagin *et al* (1982), Stefl (1984), Comings & Comings (1987*a*), Caine *et al* (1988), Robertson *et al* (1988), and Van de Wetering *et al* (1988). The abnormalities of sleep which are frequently reported include insomnia (initial, middle and delayed), sleep-talking, nightmares, night-terrors, somnambulism, enuresis, bruxism, general restlessness and inability to take afternoon naps. There has, however, been some debate as to whether or not the sleep disturbances are indicative of a disorder of arousal. Thus, Mendelson *et al* (1980) found that GTS patients have a 30% decrease in sleep stages three and four (i.e. delta or slow-wave sleep), while Glaze *et al* (1982) reported an increase in the same sleep stages, thus suggesting that GTS was a disorder of arousal. Mendelson *et al* (1980) noted that, in addition, intermittent waking time was substantially higher and non-REM sleep time was significantly less in GTS patients when compared with controls. When the patients were given haloperidol, there was a marked increase in delta sleep time and percentage, with values similar to those for volunteers (Mendelson *et al*, 1980).

Barabas *et al* (1984*a,b*) reported somnambulism and night terrors in 19 (33%) of their 57 patients, which was a significantly higher rate than that found in children with seizure disorders (3%) or learning disabilities (8%), also suggesting that GTS is therefore a disorder of arousal. Erenberg (1985) reported nightmares and insomnia in 22% of GTS subjects, but as there was neither somnambulism nor enuresis in their cohort, they concluded that it was not a disorder of arousal. Barabas *et al* (1985), in replying, pointed out that the average age of the latter group was much higher than that of their group and that this might partly explain the discrepancy in findings. They also noted that disorders of arousal tended to occur in younger children and disappear with age. Others (Bock & Goldberger, 1985) have also argued against GTS being a disorder of arousal, based on results of physiological and neurophysiological testing on GTS patients and controls.

Barabas *et al* (1984*c*) reported migraine in 26.6% of a cohort of 60 patients with GTS (aged 5.83–21.0 years), which was significantly higher than the figures for 72 children with seizure disorders (11.3%) and learning disabilities (8.0%) and the figure they quoted for the general population (4.0–7.4%): they suggested that in a subgroup of children with GTS, migraine and GTS may coexist, reflecting a similar abnormality of serotonin metabolism underlying both groups. Van de Wetering *et al* (1988) found a similar proportion of migraine sufferers (20%) in a sample of 66 GTS patients. The generally accepted figure for the prevalence of migraine in the general population is taken from large community studies in Wales by Waters and colleagues, and in America by Markush and coworkers, and is given as 23.2% for women of 21 and over, and 14.9% for men (Smith, 1980). Taking data from these substantial studies into account, the prevalence of migraine in GTS does not appear to be increased.

## Prognosis

There have been no substantial long-term follow-up studies to document the exact course of the syndrome. However, from the literature of case reports and from clinical experience, it is clear that it is a lifelong illness. The earliest illustration of this was the Marquise de Dampierre, originally described by Itard in 1825 and again by Gilles de la Tourette himself in 1885: her symptoms began at the age of seven years and she continued to exhibit them until she died at the age of 85. There have been occasional reports of complete remission (Bockner, 1959; Fernando, 1976), but this is the exception. Abuzzahab & Anderson (1973) report 3.3% of patients spontaneously remitting, while Shapiro *et al* (1978) note that coprolalia remits in 19% of subjects.

The overt symptoms of GTS are well documented by physicians, but remarkably little is written by people afflicted with GTS. Bliss (1980), a male with a 62-year history of GTS, is an exception. He elegantly describes 35 years of "stalking this thing", and self-observation of the subjective events which surround the symptoms of GTS. He discusses sensory stimuli which precede the movements or sounds, "normal" versus GTS actions, how new tics start, coprolalia, and devices he uses to control his GTS symptoms.

Although the diagnostic criteria include age of onset before 21 years, at least two reports in the literature have appeared in which GTS symptoms commenced at the ages of 35 (Araneta *et al*, 1975) and 45 (Marneros, 1983) in otherwise apparently normal persons: in addition, we have seen such cases in clinical practice, but have refrained from diagnosing them as GTS, and have instead referred to them as having a 'Tourette-like syndrome' (Robertson & Trimble, unpublished), although one had obsessive-compulsive symptoms beginning at the age of ten, and in years to come (*see below*) he may well receive the diagnosis of GTS.

### Psychopathology

From 1900 to 1965 the GTS literature was predominantly psychoanalytical, with many classic descriptions by early writers. It is perhaps no coincidence that some of the first comments on the psychopathology of GTS patients were made by Gilles de la Tourette himself in 1899, when he noted the anxieties and phobias of his patients. In that paper he noted the ideas of Guinon (1886), who suggested that "tiqueurs" nearly always had associated psychiatric disorders characterised by multiple phobias, arithmomania and agorophobia. Patrick (1905), in his writings on "convulsive tic", described GTS as "the disease of tics - the entire body is affected by peculiar, sudden, more or less violent, intempestive, malapropos gestures", but then acknowledged the psychiatric aspects thus: "The expression convulsive tic implies a motor malady. This is only half the truth, and, if one may be pardoned a hibernianism, the lesser half". He then goes on to suggest that GTS is a "sensori-psychomotor derangement".

Thereafter Meige & Feindel (1907), in "the confessions of a victim to tic", described the psychopathology of their tic patient, who almost certainly had GTS, drawing attention to "the fundamental importance of the psychical element that precedes the motor reaction". Psychoanalytical speculation then dominated the literature, with notably Ferenczi (1921), who expressed the opinion that "many tics may turn out to be stereotyped equivalents of onanism" and felt that tics were closely related to narcissism. He speculated further that tics and catatonia have many symptoms in common such as echophenomena, stereotypies, grimacing movements and mannerisms. He interpreted the rigidity and "gymnastic" movements of catatonics as displaced erections, and then went on to suggest that "tonic rigidity would prove to be a summation of numberless clonic defensive convulsions in which catatonia would be merely the climax of cataclonia [tic]". He further likened the origin of the tics to that of hysterical conversion symptoms, hinting at past trauma and retrogression of incompletely abreacted effects.

The ideas of Ferenczi were perpetuated by Mahler and colleagues (Mahler & Rangell, 1943; Mahler, 1944; Mahler *et al*, 1945; Mahler & Luke, 1946), who, while acknowledging that the symptoms of GTS were probably mediated via striopallidal connections, suggested they occurred in highly narcissistic individuals with disturbed psychosexual development and parent-child relationships. They noted, in particular, the frequent indulgence of tiqueurs in masturbation, and how, eventually, the tics themselves had an orgastic quality to them. Ambivalence characterised their findings of intense aggression and love towards parents, who were either overprotective mothers or rigid, exacting or perfectionistic. Basically they regarded the GTS symptoms as an expression of this conflict between erotic and aggressive drives and the internalised censoring controls. Motor tics were the "pathological solution of conflict" and underlined the fact that during their latency period the psychological and interpersonal problems of the patients superimposed on the underlying cerebral pathology resulted in their expressional motility being "in a state of permanent overexcitation, independent of the normal inhibiting and controlling centres". They thus point out that the latency period - the common time of onset - is a time when the repressive forces against primitive infantile wishes are at a maximum. Thereafter Fenichel (1945) suggested that tics were involuntary motor equivalents of emotional activity, allowing hitherto repressed impulses to be expressed in disguised form: the muscles are used for the immediate discharge of infantile wishes of a sadistic or sexual nature which become "independent of the organised ego".

Subsequently, the relationship of GTS to psychosis was addressed by the analysts, who distinguished single tics (one of a series of neurotic symptoms) from generalised tics, which were seen as a defence against becoming psychotic (Heuscher, 1953). Finally, Kanner (1957) summarised the suggestions of European psychoanalysts with respect to the psychopathology of GTS, including the following examples: in the preschool children . . . the "ticks" in most instances consisted of "rudimentary bad habits, easily influenced" (Boncour); "monosymptomatic neuroses"; "constitutionally increased muscular erotism" (Sadger); conversion symptoms on a sadistic-anal erotic basis; masturbation equivalent (Deutch, Reich) and moral conflict between ego and superego. These analytic and dynamic formulations are fascinating, especially when one considers that some of them were linked to specific areas of the brain which have been recently implicated in the neuropathology of GTS. Although they are interesting, virtually no one today sees GTS from these viewpoints.

The psychopathology of GTS subsequent to 1965 is somewhat controversial. Thus, Shapiro & Shapiro (1982*a*) have not observed an association between GTS and any specific psychiatric syndrome or psychodynamic factors, and, in a controlled study using the Minnesota Multiphasic Personality Inventory (MMPI), a group of GTS patients did not differ significantly from general psychiatric out-patients on factors such as overt and underlying psychosis, obsessive–compulsive traits, inhibition of hostility, hysteria and general maladjustment. However, Shapiro *et al* (1978) did report that only one patient out of 34 was free from psychiatric illness, the majority being diagnosed as having various types of "personality disorders". They pointed out that there may be a subgroup of GTS patients who have a great deal of difficulty with compulsive ritualistic behaviour, but there did not appear to be any other defining characteristics of this subgroup. Grossman *et al* (1986) evaluated 29 GTS patients using the MMPI, and reported that they scored higher than matched controls on the following subscales: schizophrenia, depression, psychopathic deviate, psychasthenia and hypochondriasis.

Corbett *et al* (1969) compared the psychopathology of tiqueurs (including patients with GTS) with that of disturbed children, and found that tiqueurs had significantly more habit disorders, obsessional symptoms and hypochondriasis, and significantly fewer conduct disorders. Morphew & Sim (1969) extracted information on 43 GTS patients via a literature search, and specifically addressed the question of psychopathology. Over 50 childhood neurotic traits were recorded, and a high proportion (33%) of enuretics were found; this was regarded as particularly noteworthy, as just under half of these were female, which is higher than would be expected as the condition is more common in boys. Phobic features were also common (19%). There were 21 recorded personality problems, 14% of patients being hysterical psychopathic, 10% paranoid and 5% hysterical. Morphew & Sim felt that the psychopathology was associated with hostility and aggression, directed particularly at a parent or spouse. Montgomery *et al* (1982) interviewed 15 patients with GTS: one satisfied the criteria for a secondary affective disorder; four probands were psychiatrically normal. Antisocial behaviour was found to be common, and included pathological lying, shoplifting, truancy, harming animals and setting fires. Wilson *et al* (1982) studied 21 children with GTS, aged 7–16 years, and constructed a 65-item GTS checklist, which they administered to the GTS subjects and two control groups. Results showed that the GTS group had significantly more behaviour problems than those in the control group, but were comparable to those in special classes. No specific abnormalities or patterns of difficulties were found, and the severity of the behaviour problems correlated directly with the severity of the movement disorder and inversely with the IQ.

Van de Wetering (personal communication) assessed 28 children with GTS using the Connors–Modified with anxiety and mood items added, and found the GTS sample to be significantly more anxious and depressed than a matched control population.

Comings & Comings (1987*a*) evaluated GTS patients using a modified Beck questionnaire and reported significantly more depression in GTS patients than in controls, and a high "mania" score, as evidenced by feelings of being high or excited, activity, spending sprees, hypersensitivity, talking too fast to be understood, inability to sleep, distractability, and feeling in possession of special powers.

Robertson *et al* (1988) used a specially selected group of standardised rating scales to assess various aspects of psychopathology in a cohort of 54 adult GTS patients. The mean scores for depression, anxiety and hostility were higher than in normal populations. Depression correlated with early onset and longer duration of the disorder, while coprolalia was associated with increased hostility scores. No significant associations emerged between psychopathological variables and neurological or electroencephalogram (EEG) abnormalities.

In conclusion, it does seem that patients with GTS are especially prone to depression, which is probably related to the duration of the GTS: this could be explained, at least in part, by the fact that GTS sufferers have a chronic, socially disabling and stigmatising disease. A genetic predisposition to depressive illness should also, however, be borne in mind. It is not generally accepted that there is an association between GTS and mania. Anxiety and hostility scores also appear to be high in patients with GTS, but both of these features could be accounted for by depression, as the studies which noted them failed to control for depression.

### Psychosis

There is no association between psychosis and GTS apart from a few case reports: these include mania (Bleich *et al*, 1985), bipolar disorder (Burd & Kerbeshian, 1984), schizophreniform psychosis (Caine *et al*, 1978; Takeuchi *et al*, 1986), and psychosis in the setting of mental handicap (Reid, 1984). There have been two reports (Burd & Kerbeshian, 1985; Kerbeshian & Burd, 1986*a*) of children with visual impairment, Ganser syndrome and GTS, and the authors note that a number of their patients (all children) with GTS have experienced 'brief auditory hallucinations' which varied between true hallucinations and intense eidetic auditory imagery. The authors (Kerbeshian & Burd, 1987) later described 11 cases of GTS (although only two were typical and uncomplicated), demonstrating how childhood schizophrenia could be misdiagnosed, when the children actually had GTS. Six cases of GTS and Asperger's syndrome have been reported by the same group (Kerbeshian & Burd, 1986*b*). Robertson *et al* (1988) reported no psychotic patients in a cohort of 90, although three exhibited ideas of reference.

### Obsessional disorder

There is a growing literature on obsessional disorder and GTS, and it is becoming increasingly evident that there is a clear and strong association between obsessional thoughts and behaviour both in patients with GTS and in their family members. Thus, many authors have now reported GTS patients with obsessional symptoms, traits or illness, varying from single case reports to significant percentages of patient populations: 11% (Kelman, 1965), 31% (Fernando, 1967), 32% (Comings & Comings, 1985), 33% (Abuzzahab & Anderson, 1973), 38% (Asam, 1982), and as high as 60% (Hagin *et al*, 1982), 66% (Montgomery *et al*, 1982), 68% (Nee *et al*, 1980), 71% (Morphew & Sim, 1969), 74% (Stefl, 1984) and 80% (Yaryura-Tobias *et al*, 1981). Montgomery *et al* (1982) suggest that the obsessive-compulsive symptoms increase in frequency with the duration of GTS.

Robertson *et al* (1988) found that 37% of their group of 90 GTS patients reported obsessive-compulsive behaviour, and using standardised rating scales they found much higher scores in the GTS group compared with normative data. In addition, coprolalia and echophenomena were significantly associated with obsessive-compulsive phenomena. In contrast to Montgomery *et al* (1982), no relationships between age or duration of GTS and obsessive-compulsive phenomena were found.

Frankel *et al* (1986) assessed the incidence of obsessive-compulsive disorder (OCD) among both British and American patients with GTS, American patients with OCD (diagnosed according to DSM-III criteria), and normal control American subjects, using a specially designed inventory. Again GTS patients had significantly elevated inventory scores when compared with normal controls. It is of interest that the highest score of any individual in the study was from the GTS sample. Green & Pitman (1986) conducted a similar study comparing patients with GTS to those with OCD and a normal control population. Of the 16 patients with GTS, four of the nine males (45%) and six of seven females (86%) met DSM-III criteria for OCD (disregarding the DSM-III exclusion of the OCD diagnosis in the presence of GTS). It is of interest that the OCD cohort also showed a similar pattern of symptom overlap, in that 69% had either a personal or family history of tics, in comparison with only 6% of the controls.

In a cohort of 66 Dutch GTS patients, Van de Wetering *et al* (1988) found 47% admitted to obsessive-compulsive rituals, 18% to obsessive thoughts and 4% to "obsessive imaging". Van de Wetering (personal communication) assessed 28 children using the children's version of the Leyton Obsessional Inventory translated into Dutch, comparing them with a matched control population, and found that the children with GTS scored significantly higher than the controls. Comings & Comings (1987*a*) also assessed patients with GTS for obsessional behaviour, and found that it occurred significantly more in the index group than in a control population.

Using screening questions from the Schedule for Affective Disorders and Schizophrenia, specific enquiries about rituals and "habits", and the questionnaire for obsessionality developed by Carey and colleagues, Caine *et al* (1988) reported 20 out of 41 patients (49%) in their epidemiological study to have obsessional ideas or ritualistic motor behaviour associated with obsessive ideas. The most commonly encountered were "evening-up", where a series of rituals was conducted to ensure the body was "symmetrical or balanced", counting games and touching rituals to "ward off" bad omens: only three individuals, however, were significantly socially impaired to warrant a diagnosis of OCD.

The precise phenomenology of the obsessional thoughts and behaviour has been, to date, not widely reported, except to say that arithmomania (counting rituals or obsessions with numbers) and "evening up" or a concern with symmetry, checking and arranging, are common. This is particularly noteworthy, as despite the fact that a relationship between obsessive-compulsive phenomena in GTS and coprolalia has been reported (Robertson *et al*, 1988), the thoughts and rituals were, by and large, not dominated by diet, germs and fear of contamination. One study (Frankel *et al*, 1986) interestingly reported that the items endorsed by GTS patients changed with age. Thus, younger patients endorsed more items relating to impulse control, whereas older GTS subjects were more concerned with checking, arranging and fear of contamination. It is of note that the British group in this study were a smaller consecutive adult subgroup of the Robertson *et al* (1988) cohort. It is clear, therefore, that more studies into the precise phenomenology of obsessionality in the context of GTS should be performed, highlighting the differences and similarities with DSM-III-R obsessional disorder.

Others have addressed the question of the link differently, but even so Yaryura-Tobias & Neziroglu (1983) clearly regard GTS as an obsessive-compulsive disorder and suggest that it may actually be a hyposerotonergic condition. Cummings & Frankel (1985) comment on similarities between GTS and OCD, including age of onset, lifelong course, waxing and waning of symptoms, involuntary, intrusive, ego-alien behaviour and experiences, occurrence in the same families, and worsening with depression and anxiety.

The argument for a clear association between GTS and obsessional disorder also comes from the recent findings of Kurlan *et al* (1986), Pauls *et al* (1986*a*,*b*), Comings & Comings (1987*b*), and Robertson *et al* (in preparation), who found that many relatives of GTS patients describe obsessive-compulsive thoughts and actions in the absence of tics or vocalisations, which, they felt, suggests that GTS and OCD may be aetiologically related. It is of added interest that in the GTS twin study of Jenkins & Ashby (1983), both twins were described as "obsessional".

It would appear, therefore, that obsessional disorder is an *integral* part of GTS, and, in this context, it is interesting to note that Pierre Janet, in 1903, in his treatise *Les Obsessions et la Psychasthenie*, described three clinical stages of psychasthenic illness: the first was the "psychasthenic state", the second "forced agitations", which included motor tics, while the third was obsessions and compulsions (Pitman, 1987).

The author wishes to speculate, at this juncture, that there is a genetic basis (*see below*) to GTS and that the phenotype may be expressed on a spectrum, with GTS alone at one end, GTS and a variety of tic disorders (with or without obsessional disorder) in the middle, and more obsessional disorder at the other end. It is further suggested that the type of obsessional disorder found on this spectrum may well be different from that in the majority of DSM-III-R obsessional disorder subjects. However, this is probably an oversimplification as it does not explain the presence of a pure GTS without obsessional disorder.

## Family psychopathology

If indeed psychopathology is an important and distinctive feature of GTS, a positive family history of psychiatric illness might be expected, but this has not received much attention. Gilles de la Tourette himself (1899) had already noted that the family history of patients with GTS was almost invariably "loaded for nervous disorder". Samuel Johnson's father, Michael, clearly suffered from depression, "a general sensation of gloomy wretchedness", and it is from him that Dr Johnson "inherited . . . a vile melancholy" (Boswell, 1867). Since then, only case reports and small studies have noted a positive family history of psychopathology (MacDonald, 1963; Field *et al*, 1966; Fernando, 1967; Morphew & Sim, 1969; Lieh Mak *et al*, 1982). Montgomery *et al* (1982), however, specifically addressed the question, and found that 70% of 30 first-degree relatives of 15 GTS patients satisfied Feighner criteria for psychiatric illness, the most common diagnoses being unipolar depression, obsessive-compulsive illness and panic disorder. More recently, both Green & Pitman (1986) and Pauls *et al* (1986*a*,*b*) found the rate of OCD significantly higher among GTS relatives than in control populations. Robertson *et al* (1988) reported that 48% of 90 probands had a positive family history of psychiatric illness, of which the most common disorders were depression, schizophrenia and obsessional disorder. While it is acknowledged that these studies are not controlled, it would appear that there is a rise in psychiatric morbidity in the relatives of GTS patients, and that it appears to be specific, with special reference to obsessional disorder and possibly depression. Before any more dogmatic a statement can be made, further controlled studies are needed.

## Neuropsychology

Golden (1984) reviewed the literature on neuropsychological functioning and specific deficits in GTS in detail, examining 13 studies totalling 334 patients. Normal intelligence, similar to that in control populations, was found in several studies. Nine studies specifically looked for 'organic' factors, which were identified in six studies (44% of patients studied). Examples of these 'organic' factors included 'encephalopathy' on the Bender Gestalt test, verbal performance discrepancy of more than 15 points, and evidence of dysfunction on the Halstead & Reitan-Indiana neuropsychological assessment battery. Several investigations noted significant discrepancies between verbal and performance IQ scores. Language skills appear to be largely unimpaired, while deficits in visuopractic performance have been documented by a number of authors, and appeared to be quite consistent. Several groups reported that achievement in mathematics and arithmetic seemed specifically more affected in patients with GTS than other academic skills (Golden, 1984). Learning problems were found in 36% of 200 children with GTS (Erenberg *et al*, 1986). Although rare, GTS has been reported in the mentally handicapped population (Golden & Greenhill, 1981; Reid, 1984), with mental retardation being reported in 10% of one GTS cohort (Golden & Hood, 1982).

Many have investigated the effects of medication on cognitive function in patients with GTS, and it seems that haloperidol has no consistent global effect on performance (Golden, 1984). It still remains to be proven, however, that individual patients are not impaired and that there is not a deleterious effect on specific areas of cognitive function (Golden, 1984).

### Neurology

In the group of patients examined by Shapiro *et al* (1978), subtle neurological deficits were found in 57%, and 20% were left-handed or ambidextrous. Most (78%) had minor motor asymmetry, while 20% had chorea or choreoathetoid movements. Other abnormalities included posturing, poor co-ordination, nystagmus, reflex asymmetry and unilateral Babinski reflexes. In contrast, Lees *et al* (1984), using a standardised handedness questionnaire (Annett, 1970), found 87% of their sample of 53 patients to be right-handed, and other investigators have found only minor non-specific neurological abnormalities in only a few patients (Lees *et al*, 1984; Regeur *et al*, 1986; Erenberg *et al*, 1986; Caine *et al*, 1988; Robertson *et al*, 1988). Abnormalities have included chorea, dystonia, torticollis, dysphonia, dysdiadokochinesis, postural abnormalities, reflex asymmetry and motor uncoordination.

### Neuropathology and neurophysiology

Shapiro *et al* (1978) reviewed the literature on EEG findings in GTS in 11 studies; of 127 patients reported, 66% were said to have abnormal EEGs. In their own cohort of 79 patients, 47% had EEG abnormalities, this being more common in children (71%) than in adults (25%). Other studies have reported lower rates, with some degree of consistency. Thus, abnormalities have been found in 12.5% (Krumholz *et al*, 1983), 13% (Lees *et al*, 1984), 17% (Bergen *et al*, 1981; Obeso *et al*, 1982), 20% (Verma *et al*, 1986) and 37% (Robertson *et al*, 1988) in comparable samples. Abnormalities detected are, however, non-specific, and in particular there is no evidence of any paroxysmal activity time-locked to the tics (Obeso *et al*, 1982). It has been suggested that in affected patients who are more psychologically impaired and who have more learning disabilities, there are more dysrythmias on the EEG (Lucas & Rodin, 1973), but this was based on a small number of patients ($n = 18$).

In view of the wide spectrum of clinical manifestations of the tics of GTS, it is not surprising to find an equally wide variation in electromyelogram (EMG) patterns recorded from muscles, and one study has addressed the subject comprehensively (Obeso *et al*, 1982). In EMG recordings of simple tics, co-contraction of prime mover and antagonist muscles was seen more frequently and more complex tics were often associated with a variety of EMG patterns. The same investigators state that the build-up of a negative potential over the half second or so before EMG activation of an involved muscle is called a pre-movement, readiness or *Bereitschafts-potential*, and probably represents the summed activity of changing firing patterns in cortical neurons in preparation for movement. The investigators studied six patients with GTS and found that the normal premovement potential associated with voluntary initiated motor acts was *not* evident before spontaneous simple tics in patients with GTS. This may therefore suggest that the simple tics of GTS are not generated through the normal cortical motor pathways utilised for willed human movements.

Visual and sensory evoked potentials have been studied in GTS patients by both Obeso *et al* (1982) and Krumholz *et al* (1983), but no consistent abnormalities have been demonstrated. Late components of the event-related auditory evoked potentials were investigated in six patients with GTS and 16 healthy controls (Van de Wetering *et al*, 1985); it was concluded that GTS subjects have no abnormalities in early and late components, but that the components in the range 90–280 ms are affected, and may reflect specific attention deficits which can occur in some patients with GTS.

Recently, Tolosa *et al* (1986) evaluated neuronal excitability in 23 GTS patients by studying the effect of a conditioning stimulus on the blink reflexes, comparing the patients with matched controls. In six of the patients, studies were repeated during maximal voluntary tic inhibition. Results indicated that there is increased brainstem interneuron excitability in GTS, with reduction of these interneurones during voluntary tic inhibition.

### Other investigations

Robertson *et al* (1988) documented 71 out of 73 GTS patients to have normal computerised tomography (CT) scans (both abnormalities being cavum septum pellucidum cavities), in contrast to Caparulo *et al* (1981), who reported abnormalities such as mild ventricular dilatation, prominent sylvian fissures or cortical sulci in 38% (six) of 16 patients. Shaenboen *et al* (1984) documented the CT scan of a 16-year-old female with GTS who had a brief acyanotic spell at 30 hours of age, and delayed speech, but an otherwise unremarkable history. CT examination showed markedly enlarged occipital horns of her lateral ventricles bilaterally. Kjaer *et al* (1986) reported a CT scan of a 28-year-old female patient with typical GTS symptoms, which showed a large porencephalic cyst in the right hemisphere involving the right basal ganglia, as well as contrast enhancement in the region of the left basal ganglia. In a controlled study (Harcherik *et al*, 1985), CT scans were performed on 19 patients with GTS, and compared with those of patients with infantile autism, attention deficit disorder, and a language disorder, and a control group of 20 medical patients (headaches, post-concussion or inner ear problems). No significant differences were found between groups or controls with respect to total ventricular volume, right:left ventricular volume ratio, ventricular asymmetries, ventricle:brain ratios or brain density. Regeur *et al* (1986) reported 47 normal CT scans in a cohort of 53 GTS patients. Abnormalities included a small arachnoid cyst in the occipital region, a suprasellar epidermoid, a large defect in the right temporo-parietal region, slight cortical atrophy, and two which showed asymmetry of the ventricles. Chase *et al* (1986) reported seven normal CT scans in a cohort of nine. The abnormalities were mild ventricular dilatation in a 21-year-old male, and mild, diffuse cortical atrophy in a 40-year-old male.

In summary, only 18 out of 172 documented CT scans have been abnormal, and the abnormalities do not appear to be of direct aetiological significance.

One study using a positron emission tomography (PET) (ECAT II scanner) scan (using fluorine-18-labelled fluorodeoxyglucose) showed abnormalities in five GTS patients when compared with controls (Chase *et al*, 1984). In the GTS patients there was a relatively close positive association between metabolism in the basal ganglia (particularly the corpus striatum) and metabolism throughout the cerebral cortex. In addition, the cortical distribution of regions in which glucose metabolism seemed to have a close inverse association with the severity of vocal tics clustered in the middle and inferior parts of the frontal lobes bilaterally, extending posteriorly from the frontal poles to the post central gyrus. Coprolalia, in contrast, was inversely correlated with hypometabolism in the left parasylvian region (Chase *et al*, 1984). Continuing their work in the area, Chase *et al* (1986) assessed 12 untreated GTS patients with matched normal controls using the improved NINCDS NEURO PET scanner, with higher resolution and sensitivity than the ECAT II scanner: at horizontal levels from 8.4–8.8 cm caudal to the vertex, non-normalised glucose utilisation rates were approximately 15% below control values in the region of the frontal cingulate and possibly insular cortex and in the inferior corpus striatum ($P<0.01$).

Chase *et al* (1986) also evaluated two males (21 and 40 years) and one female (28 years) with GTS using magnetic resonance imaging with a 0.5 Tesla Picker International scanner or a 1.5 Tesla General Electric Sigma scanner, and no definite abnormalities were detected.

In the first case of 'idiopathic' GTS to be carefully studied post-mortem, no abnormalities were found (Dewulf & Van Bogaert, 1941). Balthaser (1957) subsequently suggested that there was pathological *"Wachstumshemmung"* (impaired development) of the striatum after a careful cell count of the brain of a patient with GTS, which showed that the number of small striatal cells matched the cell count in a one-year-old child. Richardson (1982), reviewing the two, concluded that there were no distinctive histopathological abnormalities.

More recently, Haber *et al* (1986) reported a detailed neuropathological and immunohistochemical post-mortem examination, performed on a 57-year-old male with a history of GTS since the age of five. He was not typical, in that he took an overdose of methylphenidate at the age of 36, and at the age of 38 his treatment had included 14 unilateral right-sided electroconvulsive therapy treatments and a variety of neuroleptic agents; he also engaged in severe self-mutilative behaviour, and at 52 a hypernephroma was discovered, and although it was surgically removed it may well have had non-metastatic cerebral effects. Neuropathological examination revealed a striking immunohistochemical finding, which was the total absence of dynorphin-like (DLI) positive woolly fibres in the dorsal part of the external segment of the globus pallidus; the ventral pallidum exhibited very few DLI-positive fibres. It was therefore concluded that a decrease in dynorphin in striatal fibres projecting to the globus pallidus constitutes a distinct pathological change in the brain in GTS (Haber *et al*, 1986). These findings certainly excite much interest, but require replication; clearly, more post-mortem studies with satisfactory controls are necessary for any definitive statements to be made.

Robertson *et al* (1987) reported that ten out of 80 GTS patients had an abnormally low serum copper level. Two of the ten were investigated in detail with copper radioisotope studies. Both exhibited abnormalities of copper handling, in that there was fast disappearance of copper from the plasma, slow uptake by the liver, and low incorporation of copper into caeruloplasmin. Wilson's disease was excluded in all 80 subjects on the basis of detailed clinical examination. The abnormalities found, however, carried no aetiological or treatment implications.

## Differential diagnosis

Most of the conditions which should be considered in the differential diagnosis of GTS are described in detail by Bruun & Shapiro (1972) and Sacks (1982). Thus, the athetoid type of cerebral palsy, seen quite commonly among mentally handicapped populations and having an age of onset between birth and three years, must be considered: however, other neurological deficits are common, and the course is usually static after the age of three. Dystonia musculorum deformans, usually presenting with a torsion dystonia, and often in the legs, is usually progressive, with a crippling state resulting 10–15 years after the onset, remissions being rare. Encephalitis lethargica in its chronic form, and the more rare klazomania, an acute post-encephalitic state, may mimic the symptoms of GTS, but there is usually other evidence or history of encephalitis and Parkinsonian symptoms associated with these disorders. Huntington's chorea usually begins in the third to fifth decade, but 1% of cases have an onset in early childhood. There is usually, however, a positive family history of the disorder, with attendant dementia and progression to death within 10–20 years.

A syndrome identical to GTS has been reported following both short-term (Lal & Alansari, 1986) and long-term (Klawans *et al*, 1978; de Vaugh-Geiss, 1980; Stahl, 1980; Seeman *et al*, 1981; Fog *et al*, 1982; Mueller & Aminoff, 1982; Jeste *et al*, 1983) use of neuroleptics. Sacks (1982) neatly distinguishes GTS from cases of "acquired Tourettism" – in which symptoms identical to those of GTS are seen in the setting of an acute or chronic cerebral insult, which occurs most commonly in post-encephalitic patients, but also includes head trauma (Fahn, 1982) and carbon monoxide poisoning (Pulst *et al*, 1983) – and "tardive Tourette Syndrome" – which was coined by Stahl (1980), and occurs in patients treated with long-term neuroleptic drugs, either arising as an elaboration of a lower-level dyskinesia, or *de novo*.

One of the most difficult differential diagnoses is that of tics of childhood, which commence between the ages of five and ten years, but many remit spontaneously and usually improve with age: for a review of the diagnostic criteria for transient tic disorder, chronic motor tic disorder and GTS, see Woody & Laney (1986) or DSM–III-R.

Spasmodic torticollis can be present at any age, although usually between 30 and 50 years. It is a form of focal torsion dystonia which may be associated with more widespread disease or accompanied by spastic speech. Approximately half the cases are progressive, while some remit spontaneously and others remain static. Sydenham's chorea occurs more frequently in females, and 75% of cases are associated with rheumatic fever, eosinophilia and EEG abnormalities. The movements are choreiform and it is usually self-limiting. Wilson's disease usually presents between the ages of 10 and 25 years and the classic signs are Kayser–Fleischer rings, cirrhosis or hepatitis, mild dementia and associated copper abnormalities in the serum and urine. It is usually progressive, resulting in death within several years. It can present in a variety of guises, ranging from no clinical signs or purely psychiatric symptoms to structural changes in liver, spleen and brain: once neurological signs, for example abnormal movements, are present, Kayer–Fleischer rings are always detectable.

Unusual syndromes such as Hallervorden–Spatz disease, Pelizaeus–Merzbacher disease, status dysmyelinatus and Jacob–Creutzfeld disease should also be considered in the differential diagnosis of GTS, but most of these have distinctive clinical features, courses, and types of movement that usually make it possible to differentiate them from GTS (Brunn & Shapiro, 1972). Other movement disorders to be considered, but which can generally be excluded on the basis of history and laboratory investigations, include those occurring as a result of manganese poisoning, excessive ingestion of amphetamines, the residual side-effects of neonatal kernicterus, phenylketonuria, acanthocytosis and hypoparathyroidism. Other conditions to be excluded in patients under investigation for GTS are epilepsy and myoclonus.

Comings & Comings (1985) stress that wrong diagnoses of GTS are common, and suggest the main reasons for this include lack of familiarity with the syndrome, suppressibility of the symptoms, and the erroneous belief that coprolalia *must* be present. It is noteworthy, however, that despite the usually typical presentation of GTS, with certain patients diagnostic difficulties do occur (Feinberg *et al*, 1986; Fahn, 1987).

## Treatment

When discussing the management of the patient with GTS it is imperative to state, at the beginning, the importance of both psychosocial measures and pharmacological intervention for the individual, as well as various manoeuvres for dealing with the family of the patient. For many adult patients with mild GTS, firm reassurance that the patient is in fact not that unusual, curious, bizarre or seriously ill, and giving the syndrome a name, is often sufficient for the individual's peace of mind. Several such patients have an initial appointment and require only one or two immediate follow-up sessions to be given feedback about the investigations which are routinely performed, information about the association (see below) and booklets for relatives and general practitioners. In a similar way, the parents of mildly affected children are happy with the name GTS, an explanation about the disorder, information about the association and booklets for teachers. Mild patients are normally seen thereafter on an annual basis, unless otherwise requested. For the moderate to severely afflicted patient, who may have the associated features of hyperactivity, attention deficit disorder, obsessive–compulsive behaviour and possibly antisocial behaviour, the management is indeed far from simple.

## Chemotherapy

Chemotherapy is, at present, the mainstay of treatment for the motor and vocal symptoms of GTS. Haloperidol was first used successfully for GTS by Seignot in 1961. Since then it has been widely used, and Shapiro & Shapiro (1982*a*) conclude that it improves about 86% of patients, with some 14% discontinuing treatment because of side-effects. Excessive sedation can be avoided by starting with a dose of 0.25–0.5 mg daily and increasing by 0.5 mg every week until a point is reached with maximum benefit and minimal side-effects (Bruun, 1984). Apart from the usual side-effects of haloperidol, dysphoric states have been reported (Caine & Polinsky, 1979; Bruun, 1982). Often as small a dose as 2–3 mg daily is adequate for symptom relief (Golden, 1984). Haloperidol is usually administered orally, although recently, successful use of the intramuscular decanoate (25 mg every two weeks) has been reported (Paolucci *et al*, 1984). It is important to note that in some patients the sleepiness associated with haloperidol was thought to have adversely affected manifestations of GTS such as learning difficulties, and speech, language and behavioural problems (O'Quinn & Thompson, 1980). Mikkelsen *et al* (1981) reported 15 patients with GTS who developed school and work avoidance and social phobia syndromes when treated with low doses of haloperidol (mean, 2.5 mg daily) for short periods of time (mean, eight weeks), the symptoms disappearing with reduction or discontinuation of the haloperidol.

Pimozide is also effective in a large proportion of patients (Shapiro & Shapiro, 1982*a*; Golden, 1984) and may produce less sedation or lethargy than haloperidol (Ross & Moldofsky, 1978). Colvin & Tankanow (1985) reviewed studies of pimozide in GTS, and concluded it has a positive response for many GTS patients, although superiority over haloperidol has not been demonstrated. They suggest that, as it may cause severe side-effects with prolonged use and/or at higher doses, it should be reserved for patients who have not responded to haloperidol, or who are unable to tolerate the side-effects of haloperidol. Doses of 0.5–9 mg/day have been shown to be adequate (Regeur *et al*, 1986), giving good clinical response with no, or only transient, side-effects, of which the most common is mild sedation.

Bruun (1984) notes how patients with GTS are very sensitive to side-effects from neuroleptic agents, highlighted by the fact that GTS patients including children have also been reported who have developed tardive dyskinesia when treated with neuroleptics (Mizrahi *et al*, 1980; Caine & Polinsky, 1981), especially when a family history of movement disorders, including GTS, was present (Golden, 1985). A patient has been reported who, during three separate trials of pimozide, developed school phobia, which was reversed with the addition of tricyclic antidepressants to fairly low doses of pimozide (Linet, 1985). Jeste *et al* (1983) suggest low dose bromocriptine for the treatment of dyskinesias secondary to neuroleptics in GTS. Weiden & Bruun (1987) describe six out of 100 patients with GTS, all of whom showed an initial response to neuroleptics, but when the dose was increased because of residual GTS symptoms, their symptoms paradoxically worsened; some changed in nature, their general demeanour and behaviour worsened, and they developed akathisia. Recently electrocardiogram (ECG) changes during treatment of 40 patients with GTS using haloperidol, pimozide, and placebo were studied (Fulop *et al*, 1987) and no adverse clinical cardiac effects or syncope were observed. However, the QTC interval was significantly prolonged by pimozide (but not haloperidol or placebo), with the result that some clinicians find it prudent to monitor patients receiving pimozide with an ECG.

Clonidine was first used in GTS by Cohen *et al* (1980), who reported 70% effectiveness. The same group (Leckman *et al*, 1985) subsequently reported a single-blind placebo-controlled trial with clonidine, finding that six out of 13 patients (46%) responded well, while six patients had equivocal responses.

Shapiro & Shapiro (1982*a*) reported less impressive figures, while Bruun (1984) and Singer *et al* (1986) found 47% responded satisfactorily to clonidine. Bruun (1984) noted that some 15% of patients had a better response to a combination of clonidine and haloperidol than they had had to haloperidol alone. Leckman *et al* (1986) have reported worsening of tics after withdrawal of clonidine. Clonidine has also been shown to be useful in children (Silverstein *et al*, 1985), but improvement may take several months.

Sulpiride, a dopamine-2 (D2) receptor antagonist, is being tried with success in both the UK (Robertson *et al*, in preparation) and the Netherlands (Van de Wetering, personal communication (1987)), but no published reports of its use to date are known. Uhr *et al* (1986) successfully treated four patients with GTS with piquindone, which preferentially blocks dopamine receptors in the mesolimbic system rather than the nigrostriatal system, and also selectively blocks D2 receptors; motor tics responded to lower doses than vocal tics.

Other drugs that have been tried with varying success are neuroleptics such as fluphenazine (Singer *et al*, 1986) and penfluridol (Shapiro *et al*, 1983), the antidepressant clomipramine (Ciprian, 1980; Yaryura-Tobias & Neziroglu, 1983) and the anticonvulsant clonazepam (Gonce & Barbeau, 1977; Bruun, 1984; Merikangas *et al*, 1985). Mesulam & Petersen (1987) reviewed the pharmacological treatment of 58 patients treated over an eight-year period: of importance is that they noted that differences in response patterns were common and thus required individualised tailoring of management. In the main, dopamine-blocking neuroleptics were the mainstay of therapy, but frequent mid-course alterations were required as previously successful drugs stopped working or as their side-effects became intolerable. Clonidine proved inferior to neuroleptics in the treatment of motor and vocal tics, but they suggested it may have a role in some patients with prominent obsessive–compulsive symptomatology. Of interest is that tardive dyskinesia never occurred in their cohort (Mesulam & Petersen, 1987).

Recent successful treatment of GTS with calcium antagonists such as nifedipine (Goldstein, 1984; Berg, 1985; Walsh *et al*, 1986) and verapamil (Walsh *et al*, 1986) has been documented, as has that with naloxone (Sandyk, 1985), lithium carbonate (Messiha, 1979) tetrabenazine (Jankovic *et al*, 1984), tetrabenazine in combination with pimozide (Fog & Pakkenberg, 1980), progabide (Mondrup *et al*, 1985), fluvoxamine (Van de Wetering, personal communication (1987)) and physostigmine (Stahl & Berger, 1981). Most other drugs which have been tried are ineffective (Shapiro & Shapiro, 1982*a*). As the acetylcholine system has been implicated in GTS, and an increased dietary intake of choline as lecithin in animals has been shown to raise acetylcholine concentration in cholinergic neurons in animals, oral lecithin has been tried in the treatment of GTS, but without success (Moldofsky & Sandor, 1983).

The precise measurement of tic frequency nearly always poses a problem, as the severity is often variable and dependent on several factors. Recently, an attempt to overcome some of the difficulties has been made by using video pictures; in addition, recordings of patients' movements while performing prescribed tasks have been made using the large-scale integrated (LSI) motor-activity monitor, which looks like, and is worn as, a wristwatch (Gillies & Forsythe, 1984).

### Psychosocial management

What is vitally important is supportive psychotherapy, counselling and advice to both patient and family, as the illness can be disabling not only to the affected individual, but to relatives as well. Support in helping the patient and family to cope are important, as is guidance to teachers (Stefl & Rubin, 1985).

An increasing number of countries, including the USA, the UK and the Netherlands, have GTS associations. The USA Tourette Syndrome Association was founded in 1972 and now comprises 47 chapters in 35 states, boasting around 15 000 subscribing members. The associations in the UK and Netherlands are smaller, but nevertheless have substantial membership and follow more or less the same structure, with several committees, including an honorary medical committee and a scientific advisory board. The associations meet regularly, provide group support, act as sources of information which can be helpful to physicians, patients, families, teachers and other interested parties, and fund and promote research on GTS. The USA and UK associations both have documentary films on GTS, and are being given increasing coverage by the media.

In many instances, as the doctors in charge of the patient, we write letters to teachers and headmasters asking for allowance for extra time in examinations, or stating that the child is unlikely to be of danger to others in, for example, a chemistry class or a swimming pool. In the UK, Netherlands and America, support groups under the guidance of a multidisciplinary team are held at regular monthly intervals. In these, the patients and their families discuss common problems and share experiences, as well as obtain practical advice from physicians and other members of their teams who are well acquainted with GTS. Topics range from the 'sufferers' recalling relatively minor problems they have had due to their symptoms, to those resulting from antisocial behaviour which may then involve the patient having an assigned social worker or probation officer.

Massed practice (over rehearsal of the target tic) (Clark, 1966; Storms, 1985) and other forms of behaviour therapy (Doleys & Kurtz, 1974) can sometimes be helpful, although, in general, the effectiveness of behavioural approaches appears to be of limited value (Savicki & Carlin, 1972; Turpin, 1982). In many instances patients with severe obsessive–compulsive behaviour are given behavioural programmes, in addition to their medication, to enable them to form strategies for coping with these disturbing symptoms. Others, whose various symptoms are relieved, but to a limited degree, with medication, are also given behavioural programmes in order to minimise the discomfort caused by symptoms such as coprolalia. Tansey (1986) reported the successful response of a patient with GTS to EEG sensorimotor rhythm biofeedback training.

In the main, formal psychotherapy has no place in the treatment of the symptoms of GTS. One review of over 100 patient trials reported success in only 12% for a period of more than six months. Improvement has been reported with psychotherapy and family therapy (Ascher, 1948; Tiller, 1978), but these cases are the exceptions.

## Genetics

Many recent investigations have addressed the question of a genetic predisposition in GTS, but the precise genetics are unclear (Zausmer & Dewey, 1987), as it is often sporadic (Baraitser, 1982). At the present time the evidence is mostly in support of a major dominant gene, although there have been several variations on this theme. Convincing evidence for a genetic factor comes from twin data. Thus, there are several well-documented studies, which included 11 concordant monozygotic twin sets (Escalar *et al*, 1972; Wassman *et al*, 1978; Shapiro *et al*, 1978; Jenkins & Ashby, 1983; Waserman *et al*, 1983; Vieregge, 1987). However, Ellison (1964) reported a male GTS whose monozygotic twin was discordant. More recently, Price *et al* (1985) reported a large twin study in GTS, involving 43 pairs of same-sex twins, in which at least one co-twin had GTS. Concordance rates for GTS were 53% for monozygotic pairs and 8% for dizygotic pairs. When diagnostic criteria were broadened to include any tics in co-twins, concordance rates rose to 77% and 23% for monozygotic and dizygotic pairs respectively. Price *et al* concluded that although these concordances are consistent with genetic aetiology, the fact that only 53% of monozygotic twins were concordant suggested that non-genetic factors also play a role in the expression of GTS. The original data from this study were re-examined and it was found that in each case of discordant twins, the unaffected cotwin had a higher birth weight than the affected twin (Leckman *et al*, 1987). It was therefore speculated that some pre-natal events or exposures such as maternal stress, antiemetic medication, or other unknown agents may lead to changes in the sensitivity of some dopaminergic receptors, and this could partially determine the eventual severity of expression of the GTS diathesis (Leckman *et al*, 1987).

In addition, numerous family studies indicate that the relatives of probands with GTS may present with either GTS or motor or vocal tics only (Dunlap, 1960; Friel, 1973; Eldridge *et al*, 1977; Erenberg & Rothner, 1978; Kidd *et al*, 1980; Nee *et al*, 1980; Baron *et al*, 1981; Hajal & Leach, 1981; Pauls *et al*, 1981; Jagger *et al*, 1982; Erenberg *et al*, 1986; Lacey, 1986; Kurlan *et al*, 1986). Moreover, some studies provide evidence that, within these families, chronic multiple tics and GTS are genetically related (Kidd *et al*, 1980; Pauls *et al*, 1981; Pauls & Leckman, 1986). Two large families have been reported. In the first, 17 out of 43 members were affected (Guggenheim, 1979). In the second (Kurlan *et al*, 1986), 69 members were interviewed; a diagnosis of definite GTS was made in ten, definite chronic multiple tics in three, probable GTS in 15, and probable chronic multiple tics in one. Two other large pedigrees as yet unpublished (Robertson *et al*, in preparation; Pauls, personal communication) also indicate that there is an increased incidence of tics (simple or chronic) and GTS in the relatives of probands with GTS.

The precise mode of transmission of GTS is unclear, as is evidence by the conflicting literature reports. Thus, Baraitser (1982) reviewed nine studies and proposed incomplete dominance as the most likely form of inheritance, while a recessive gene (supported in his view only by one study, Eldridge *et al* (1977)) seemed less likely. More recently, Comings *et al* (1984*a*), Devor (1984), Price *et al* (1984) and Pauls & Leckman (1986), using segregation analysis on independent samples, suggest the presence of a major autosomal dominant gene with varying penetrance. The family studies indicate that the 'GTS gene' may have a low (Comings *et al*, 1984*a*) or high penetrance (Pauls & Leckman, 1986).

This difference of interpretation of the expression of the gene may, however, be due to the difference in diagnostic criteria for GTS, since the Yale Group (Pauls & Leckman, 1986) use fairly stringent criteria, whereas the Duarte group (Comings & Comings, 1984; Comings *et al*, 1986*a*; Comings & Comings, 1987*a*,*b*) include many other disorders within the GTS spectrum; for example, hereditary agoraphobia, panic attacks, stuttering, mania, depression and schizoid behaviours. Comings & Comings (1986) further suggest the possibility of an X-linked modifying gene to account for the increased incidence in males.

Two studies (Comings *et al*, 1982; Caine *et al*, 1985) have studied HLA typing in GTS, and both found no association between GTS and HLA-A or HLA-B antigens or haplotypes. The latter authors also found no association between GTS and HLA-C or HLA-DR antigens.

In conclusion, there has recently been some consensus of opinion that GTS is probably inherited as an autosomal single dominant gene with varying penetrance. There have also been suggestions from both family and genetic studies that the same gene may be expressed as an obsessive-compulsive disorder (Montgomery *et al*, 1982; Pauls & Leckman, 1986; Pauls *et al*, 1986*a*,*b*; Kurlan *et al*, 1986; Comings & Comings, 1987*b*), yet there is no agreement as to whether or not the gene is expressed as solely an attention deficit disorder with hyperactivity (Comings & Comings, 1984; Kurlan *et al*, 1986; Pauls *et al*, 1986*c*) and only scant evidence for the gene being expressed as agoraphobia with panic attacks (Comings & Comings, 1987*b*). Linkage studies are under way in several centres both in the USA and the UK, but to date no positive results have been published. Further studies on the mechanism of inheritance may well be assisted by more precise definition of the phenotypes involved, in view of the spectrum of features considered by various authors. Future studies may well show that the mechanism is more complicated than a single gene, because previous studies have not entirely ruled out the possibility of other alleles or multifactorial inheritance.

## Aetiology

The neurochemical basis for GTS is, as yet, not known. A good review (Caine, 1985) examines the evidence for biochemical abnormalities, and the main hypothesis is of an imbalance of central nervous system neurotransmitter agents. Dopamine has received most support, but this is based mainly on the fact that haloperidol reduces the symptoms in a large number of patients, while stimulants such as pemoline and methylphenidate exacerbate the symptoms. In addition, homovanillic acid has been found to be decreased in the CSF of some GTS patients, although the methods involved have been criticised (Caine, 1985). Friedhoff (1986) addressed the possible role of D1 and D2 receptors in GTS, highlighting a distinction between the two. Thus, the D2 system (unlike the D1) is sensitive to 'adaptive upregulation', and so is blocked by D2 antagonists such as haloperidol or pimozide, and increases the number of D2 receptors, which serve to overcome the blockade. A similar phenomenon does not occur in the D1 system unless there are very long periods of blockade. The implications of this difference and its relevance to GTS are discussed in detail by Friedhoff, areas such as epigenetic transmission and the male:female ratio being covered (Friedhoff, 1986).

The eye-blink rate, a supposed correlate of central dopamine activity, has been found by some (Bonnet, 1982; Shelkunov *et al*, 1986) but not others (Karson *et al*, 1985) to be increased in patients with GTS.

Investigations implicating noradrenergic systems and acetylcholine have been equivocal, and there is little support for the involvement of serotonin or gamma aminobutyric acid in the pathophysiology of GTS (Caine, 1985). Others (Merikangas *et al*, 1985) have suggested two distinct biochemical subtypes of GTS, while Gillman & Sandyk (1985) have suggested an underactivity of the endogenous opioid system. Recently, levels of antibodies to cerebral $\alpha_2$-globulin ($\alpha_2$-B) in the blood of 15 children with GTS were found to correlate with the clinical picture, resulting in the authors suggesting an assay of $\alpha_2$-B as a laboratory test for the diagnosis of GTS (Morkovin *et al*, 1986).

With no one transmitter convincingly implicated to date, the importance of animal models and further post-mortem studies is stressed. Cohen *et al* (1982) have stated that GTS reflects the interaction among genetic, neurophysiological, behavioural and environmental factors. Eldridge & Denckla (1987) suggest that a complex interaction of androgenic and immunological factors are involved in susceptibility to neurodevelopmental disability and, therefore, GTS. They further note that, when viewed in this context, the observation of Balthasar (1957) of an increased number of neurones in the caudate and putamen, suggesting the persistence of an immature neuronal pattern, may be more understandable (Eldridge & Denckla, 1987).

Bonnet (1982) elegantly addressed the anatomical localisation of GTS by focusing on neurochemistry and the anatomical substrates of vocalisations and various movements, such as blinking and tics. He concluded by suggesting that the biochemical structure of the limbic forebrain structures, particularly the anterior cingulate cortex, and their interrelationships with the specific nuclei of the tegmentum, renders the cingulum the possible anatomical site for GTS. More recently, Devinsky (1983) and Lakke & Wilmink (1985) have suggested that pathology in the periaqueductal grey matter and midbrain tegmentum may be involved in GTS. Comings & Comings (1987*a*) postulate an imbalance of the mesencephalic–mesolimbic dopamine pathways, resulting in disinhibition of the limbic system, as being involved in the pathogenesis of GTS.

There is a widely held belief among both the lay public and GTS patients that GTS symptoms are associated with allergy. In addition, Bruun (1984), reviewing 300 patients with GTS, stated that although there is no evidence that allergies are causative of GTS, her clinical experience has shown that symptom exacerbation is often associated with seasonal allergy responses, and the ingestion of allergens in food, as well as by the drugs used to treat allergies. Although others (Rapp, 1986; Mandell, 1986) have also reported exacerbation of GTS symptoms on exposure to allergens, there has been little scientific evidence for the involvement of allergy in GTS (Finegold, 1985).

## Conclusion

The Gilles de la Tourette Syndrome is no longer the rarity it was once considered to be, and although not common, the prevalence is probably far higher than figures currently quoted. It occurs in all racial groups and is more common in males. The classic symptoms are a waxing and waning course of multiple motor and vocal tics, with, in roughly a third of patients, copro- and echophenomena which are, once recognised, never forgotten. Although spontaneous cases do occur, recent studies indicate that genetic factors may be involved and that an autosomal dominant gene with incomplete penetrance is the most likely mechanism. In addition, most investigators agree that GTS, chronic multiple tics, simple tics and obsessional disorder probably are expressions of the anticipated GTS gene. The precise aetiology is unknown, although neurotransmitter abnormalities, particularly dopamine, have gained much recognition: the involvement of the limbic forebrain structures, particularly the cingulate gyrus and the basal ganglia, are appealing as the possible anatomical sites for GTS.

It seems that the next phase of GTS research will continue to focus on genetics and neurochemistry. Clearly, genetic linkage would excite interest not only in those interested in GTS, but also in the field of obsessional disorder: a gene for behaviour, with particular reference to the neuroses as opposed to the functional psychoses, clearly has widespread implications. Moreover, recent discoveries that areas of the brain may be implicated not only in GTS, but also in obsessive–compulsive disorder, panic attacks and Parkinson's disease, may lead to further understanding and classification of these disorders. Indeed, Georges Gilles de la Tourette himself gained eponymous fame when he described GTS while classifying and sorting out the "chaos of the choreas".

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**Review Article**

# Affective Disorders and Cerebral Vascular Disease

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Empirical studies have recently demonstrated that major and minor depressive disorders occur in 30–50% of stroke patients, and last more than one year without treatment, although they do respond to tricyclic antidepressants. These mood disorders are not strongly associated with severity of impairment, demographic characteristics, social supports or prior personal history, but major depression is often strongly associated with left frontal or left basal ganglia lesions and pre-existing subcortical atrophy. While the aetiology of these mood disorders remains unknown, serotonergic or noradrenergic dysfunction may play a role. Mania is a rare complication of stroke: the clinical presentation and response to treatment are usually the same as mania without brain injury. Post-stroke mania is strongly associated with both a right hemisphere lesion in a limbic-connected area and a second predisposing factor, such as genetic loading for affective disorder, pre-existing subcortical atrophy or seizure disorder. This disorder may be mediated through frontal lobe dysfunction. The lesion method represents a potentially fruitful technique for investigating the mechanisms of affective disorder.

Many of the early clinical masters in psychiatry and neurology recognised that depression was frequently associated with cerebrovascular disease. For example, Kraepelin (1921) noted that the diagnosis of states of depression is frequently complicated by accompanying arteriosclerotic disease, because sometimes such disease is an accompanying phenomenon of manic–depressive insanity but at other times may itself engender states of depression. Bleuler (1951) observed that after cerebrovascular infarction, melancholic moods lasting for months and sometimes longer appear frequently. Adolf Meyer (1904) reported on clinical differences in the presentation of traumatic insanities depending upon the specific locations and causes of brain injury. It was Babinski (1922), however, who noted that a specific emotional state may be associated with unilateral brain injury when he reported that euphoria, indifference and anosognosia were characteristically associated with right hemisphere injury.

In spite of this early recognition that cerebrovascular disease may lead to characteristic mood disturbances, there was by the 1940s a general acceptance of the idea that these mood disturbances represented a psychological response of the organism to severe stress. For example, Goldstein (1948) described the catastrophic reaction as the outcome of the organism's inability to cope when faced with a serious defect in physical and cognitive functions. Fisher (1961) stated that depression due to brain damage was reactive and understandable because the brain is the most cherished organ of humanity. Systematic studies of depression and stroke, however, have consistently found that severity of depression is not closely related to severity of physical impairment (Folstein *et al*, 1977; Robinson *et al*, 1983*a*; Finklestein *et al*, 1981; Sinyor *et al*, 1986*a*). Thus, the relationship between stroke and mood change is clearly more complex than was previously thought.

In this review article, we will try to present the current state of knowledge about cerebrovascular disease and affective disorders (both depression and mania), including their clinical presentation, course, treatment, relationship to injury and impairment variables. We will begin, however, with a discussion of methodological issues, since methodological limitations play such an integral part in these studies. Limitations of method are inherent in all research that tries to examine the mental state of brain-injured patients and, based on clinical–pathological correlations, make inferences about the brain regions important in mood regulation.

## Methodological Issues

The first methodological issue is related to level of consciousness. Patients with arousal deficits (stupor and coma) cannot be verbally examined until their level of consciousness improves or they must be excluded. Thus all patients cannot be examined at the same time after brain injury.

Aphasia constitutes another confounding variable. While patients with non-fluent (Broca's type) aphasias can be examined using such techniques as non-verbal 'yes–no' responses etc., fluent aphasics with moderate or severe comprehension deficits cannot be reliably examined. In our studies, patients with more than mild comprehension deficits are excluded. We will later examine how this bias may influence the association between post-stroke depression (PSD) and important clinical variables.

Another methodological problem concerns the criteria used for the diagnosis of post-stroke mood disorders. Since somatic symptoms such as sleep or appetite disturbance may be found in medically ill patients without depression, and aphasia may prohibit examination of depressed patients, the issue of what criteria should be used for diagnosing depression is important (Ross & Rush, 1981). Ross *et al* (1986) suggested that criteria other than the mental state, such as sleep or appetite disturbance, response to treatment or dexamethasone suppression test should be used. We have, however, consistently used DSM–III (American Psychiatric Association, 1980) symptom criteria for major depression and minor depression (the term minor depression is taken from Research Diagnostic Criteria (Spitzer *et al*, 1975) but is based on the symptoms of dysthymic disorder) because we have felt that the mental states of sadness, hopelessness, self-blame etc. are essential elements for the reliable diagnosis of a depressive syndrome. Whatever criteria are used for diagnosis, however, it is essential to show both reliability and validity of syndromic cluster. Our findings on the validity of this distinction between major and minor depression will be presented later in the review.

The assessment of the brain lesion itself constitutes another methodological problem. Over the past ten years, the identification of cerebral ischaemic lesions has relied almost exclusively on localisation by computerised tomography (CT) or, sometimes, angiography. Almost half of clinically diagnosed strokes, however, do not produce visible changes on CT scan, and those that do, require several weeks before swelling and necrosis subside and a stable image is seen. Thus, many small lesions or lesions located in the brainstem/posterior fossa cannot be localised in a way that allows clinical–pathological correlations to be drawn. How the exclusion of these lesions influences findings in PSD is uncertain.

The recent developments of the magnetic resonance imaging (MRI) technique, however, may provide better information for such studies. Several investigators have shown that MRI is more sensitive than CT in detecting symptomatic cerebral infarctions within 72 hours of onset, as well as infarctions involving the posterior fossa (Kertesz *et al*, 1987; Council on Scientific Affairs, 1988). Another promising technique for the study of post-stroke mood disorders is positron emission tomography (PET). PET scans can provide quantitative analysis within specific brain regions of important physiological variables, such as cerebral blood flow, oxygen consumption and glucose utilisation (Baron, 1985) as well as binding of receptor-specific ligands (Wong *et al*, 1984). We will discuss below our findings on PSD using PET scans. The great advance of PET scanning, however, is that it can show metabolic and biochemical changes which may not be within the ischaemic site seen on MRI or CT images. This raises the last methodological issue, which is distant effects of lesions.

Although CT or MRI imaging of patients with brain lesions can provide discrete localisation of ischaemic tissue, mood disorders may be mediated through distant effects of lesions, or lesions may simply play a facilitatory role for another primary mechanism leading to depression. PET scanning, however, may be able to identify these distant effects of brain injury. For example, several PET scan studies have demonstrated hypometabolism in areas distant from the actual lesion location (Feeney & Baron, 1986). In view of this phenomenon, which has been termed diaschisis, inferences about the function of intact brain tissue in the production of mood disorders based on findings from lesion studies must be very tentative.

However, in spite of these limitations, in disorders such as affective disorder, for which aetiopathology remains obscure, the lesion method may provide insights and hypotheses for further research. Such studies may identify the type or location of brain dysfunction which could directly, or through neuronal connections, play an important role in mood disorders. For a more in-depth discussion of methodological issues see Robinson & Lispey (1985).

## Post-stroke depression

Since depression is the most common emotional disorder to follow stroke, we will begin with a review of post-stroke depression (PSD). Although much of the data on PSD is currently based on studies done by our research group, a number of other investigators have done empirical work in this area and their findings will be compared with ours.

### Prevalence

The prevalence of post-stroke depression has been examined among both out-patients and acute stroke in-patients. In a study of patients attending an out-patient clinic, we found that 30% of the 103 consecutive patients examined were depressed as measured by the General Health Questionnaire (Goldberg & Hiller, 1979; Robinson & Price, 1982). Feibel & Springer (1982) have also reported a 26% prevalence of depression in 91 stroke out-patients who were studied six months after stroke.

Among 103 patients hospitalised for care of an acute stroke, using a semi-structured psychiatric interview (the Present State Examination (PSE) (Wing *et al*, 1974)) and the diagnostic criteria from DSM–III (American Psychiatric Association, 1980), we found that 27% demonstrated symptom clusters of major depression, while 20% showed symptoms of minor (dysthymic) depression (Robinson *et al*, 1983*a*).

Other authors have also found a high frequency of PSD among hospitalised stroke patients. Among a consecutive series of patients admitted to a rehabilitation hospital, Sinyor *et al* (1986*a*) reported prevalences for mild, moderate and severe depression of 17%, 23% and 9%, respectively. In a recent study, Ebrahim *et al* (1987) examined a consecutive series of patients admitted to a general hospital with an acute stroke. They reported a frequency of mild–moderate and severe depressions of 23% and 23%, respectively. In a recent community study on PSD, Wade *et al* (1987) found that three weeks after stroke, 22% of the patients were depressed, while another 11% were 'probably' depressed.

In summary, numerous studies have found that depression is a frequent sequela of stroke and up to 50% of stroke patients may develop depression during the acute post-stroke period. Among out-patient stroke populations the prevalence of depression is close to 30%.

### Phenomenology and diagnosis

The clinical symptoms of post-stroke major depression include sadness, anxiety, tension, loss of interest and concentration, sleep disturbance with early morning awakening, loss of appetite with weight loss, difficulty concentrating and thinking, and thoughts of death or suicide. In a recent study, we found that the depressive syndrome profiles (based on PSE syndrome classification) for 43 patients with post-stroke major depression were remarkably similar to those found in 43 age-comparable patients with functional major depression (i.e. depression without a known neuropathology) (Lipsey *et al*, 1986).

The second type of PSD we have identified is minor depression. This disorder is characterised by sadness, sleep disturbance, loss of energy, difficulty concentrating or thinking clearly, social withdrawal, loss of interest, brooding, a pessimistic attitude toward the future, irritability, and tearfulness.

Although other investigators have tended to use cut-off scores on depression rating scales to define depressive subtypes (Sinyor *et al*, 1986*a*; Ebrahim *et al*, 1987), we have separated PSDs into diagnostic categories of major and minor depression based on differences in clinical phenomenology as defined by DSM–III criteria. Subsequent studies have supported this division and provided some validation for making specific diagnoses in the brain-injured population. For instance, only major depression shows a strong association with lesions of the left frontal cortex or basal ganglia (primarily head of the caudate) (Starkstein *et al*, 1987*a*). Major depression spontaneously remits one to two years after the stroke, while the majority of patients with minor depression after acute stroke remain depressed two years later (Robinson *et al*, 1984*a*, 1987). Major but not minor PSD produces both a dementia of depression (pseudodementia) (Robinson *et al*, 1986) and a failure to suppress serum cortisol following dexamethasone administration (Lipsey *et al*, 1985).

In conclusion, the available evidence suggests that there may be at least two types of depression after stroke. Major depression can be defined using specific diagnostic criteria and has many similarities to functional major depression, including clinical symptoms, cognitive impairment, duration, biological markers and treatment response. On the other hand, minor depression can also be defined by its clinical phenomenology and has a course similar to the chronic characterological depressions termed dysthymic disorder. This differentiation may ultimately be a useful initial step in identifying post-stroke clinical disorders with different mechanisms.

### Longitudinal evolution

As indicated in the previous section, our two-year longitudinal study of hospitalised stroke patients found that six out of six patients with major depression at the time of acute hospital admission improved by two-year follow-up, while seven out of ten patients with minor depression in-hospital were still depressed at two-year follow-up (Robinson *et al*, 1987).

Differences in longitudinal course of depression, however, were not only related to depressive diagnosis but also to lesion location (Starkstein *et al*, 1987*a*). For instance, major depression was significantly associated with left frontal or left basal ganglia lesion location, while minor depression occurred with either right or left hemisphere parietal–occipital lesions (Robinson *et al*, 1984*b*). In another recent study, we compared patients with restricted brainstem and/or cerebellar lesions with those having unilateral hemispheric lesions in the middle cerebral artery (MCA) territory (Starkstein *et al*, 1988*a*). At the initial (in-hospital) evaluation, 48% of patients with MCA-territory lesions had either major or minor PSD, as compared with 35% of patients with cerebellar/brainstem lesions. At six-month follow-up, however, frequencies of depression were 54% for MCA-territory lesions and 24% for brainstem/cerebellar lesions ($\chi^2 = 3.89$, $P < 0.05$), and at one- to two-year follow-up, frequencies of depression were 45% for hemispheric lesions and 9% for brainstem/cerebellar lesions ($\chi^2$ Yates $= 3.6$, $P = 0.05$). These findings suggest that hemispheric infarcts in the territory of the middle cerebral artery produce longer-lasting depressive disorders than brainstem/cerebellar infarcts.

Up to this time, no other investigators have examined the longitudinal evolution of PSD; thus, confirmation or extension of this important aspect of PSD awaits further research.

In summary, the natural course of PSD appears to be approximately one year for major depression and more than two years for the majority of minor depressions. In addition, however, this longitudinal evolution may be influenced not only by clinical diagnosis (i.e. major versus minor depression) but also by region of brain dysfunction which gave rise to the depression. Ultimately, this kind of clinical–pathological correlation may be another way of identifying different aetiological subtypes of post-stroke affective syndrome.

## Relationship with associated variables

### *Lesion location and size*

As indicated earlier, we have consistently found a strong relationship between lesion location and post-stroke major depression (Robinson *et al*, 1984*b*; Starkstein *et al*, 1987*a*). Major depression was significantly more frequent among patients with left anterior lesions (an anterior lesion is defined as having its anterior border proximal to 40% of the AP distance on CT scan) than among those with any other lesion location (Robinson *et al*, 1983*b*, 1984*b*). In addition, the proximity of the anterior border of the lesion from the frontal pole (as determined from CT scans) correlated significantly with severity of depression. These findings also held for left-handed stroke patients (Robinson *et al*, 1985*a*) and patients with bilateral brain injury (Lipsey *et al*, 1983).

We have also recently examined patients with single lesions restricted to either the cortex (without involvement of deep grey matter) or subcortical structures (Starkstein *et al*, 1987*a*). Patients with lesions involving the left frontal cortex or left basal ganglia had significantly higher frequencies of post-stroke major depression than patients with left posterior lesions (60% v. 9% for cortical lesions and 67% v. 0% for subcortical lesions). Moreover, there was a significant correlation between the distance of the lesion (cortical or subcortical) from the anterior pole and severity of depression scores ($r = 0.68$ for subcortical lesions, $r = 0.52$ for cortical lesions) (Starkstein *et al*, 1987*a*).

Thus far, Sinyor *et al* (1986*a*) are the only other investigators who have examined the relationships between PSD and lesion location as documented by CT scan. For patients with anterior lesions, they also found a significant correlation between proximity of the lesion to the frontal pole and severity of depression ($r = 0.47$) (Robinson *et al*, 1988*b*). They did not, however, find a difference between right and left hemisphere lesions in the frequency of PSD.

This failure to find a lateralised effect of lesions raises another issue related to PSD and lesion location. Although numerous investigators have reported a lateralised emotional response to brain injury (Gainotti, 1972; Gasparrini *et al*, 1978; Finklestein *et al*, 1981; de Bonis *et al*, 1985; Belyi, 1987), others have found no difference in the frequency of depression between patients with left and right hemisphere lesions (Folstein *et al*, 1977; Sinyor *et al*, 1986*a*; Ebrahim *et al*, 1987). Although this issue has not been resolved, we have suggested that several important variables, including time post-stroke, diagnosis of depression, prior brain injury and intrahemispheric lesion location (anterior but not posterior lesions produce a lateralised response), can all influence the expression of lateralised emotional response to brain injury.

An allied problem is illustrated by the following question: if lesion location is central to the development of PSD, why does not everyone with a left anterior lesion develop PSD? We examined this question in another recent study in which 13 pairs of patients were matched for lesion size and location and time since injury, but one patient in each pair had major PSD while the other patient was not depressed (Starkstein *et al*, 1988*c*). Although we found no differences in factors such as age, sex, or personal or family history of psychiatric disorder, patients with major PSD had significantly higher values on CT scan analysis for both lateral ventricle to brain ratio and third ventricle to brain ratio, with no evidence of cortical atrophy. Since most of the CT scans were obtained soon after the stroke, these increased ventricle to brain ratios probably reflected subcortical atrophic changes which existed before the stroke and may have been an important predisposing factor for PSD.

It might be argued, however, that the association between depression and anterior lesion location results from the exclusion of patients with severe comprehension deficits (many of whom have posterior cortical lesions involving the Wernicke's area). Although this is possible, two findings suggest this may not be the case. First, if the association of depression with anterior lesions is an artefact of excluding patients with posterior lesions, the frequency of depression among patients with comprehension deficits would have to be extremely high (left frontal lesions produce major depression in 60–70% of cases, and patients with posterior lesions who are excluded would have to have at least this frequency of depression). This high rate of depression, however, is not consistent with clinical reports of unconcern or sometimes euphoria among patients with fluent (Wernicke's) aphasia (Benson, 1973). Secondly, patients with pure subcortical lesions (which are rarely associated with severe comprehension deficits) showed the same significant association between depression scores and distance of the lesion from the frontal pole as patients with cortical lesions (Starkstein *et al*, 1987*a*).

In conclusion, several studies have demonstrated the importance of lesion location in the pathogenesis of PSD. Left hemisphere lesions, mainly in the frontal cortex or basal ganglia, have a strong association with PSD, and the closer the lesion is to the frontal pole the more severe the depression. Subcortical atrophy, probably before the actual stroke, may constitute an important risk factor for the development of PSD.

### *Physical impairment*

As indicated earlier in this review paper, numerous studies have demonstrated that the association between PSD and physical impairment is quite weak. The first investigators to address this issue were Folstein *et al* (1977), who compared 20 consecutively admitted stroke patients with ten orthopaedic patients. While the two groups proved to be comparable in terms of functional disabilities, the stroke patients had a significantly higher frequency of depression (45% v. 10%). In subsequent studies, we reported that during the acute post-stroke period, the correlation coefficient between the degree of physical impairment and depression scores was about 0.30. Thus physical impairment could explain only 10% of the variance in depression scores, as compared with lesion location which explained about 50% of the variance (Robinson *et al*, 1984*b*; Starkstein *et al*, 1987*a*).

In our prospective study of stroke patients, however, we found a steady increase in the correlation between depression and degree of functional physical impairment (as measured by the Johns Hopkins Functioning Inventory) over the first six months after stroke (from 0.38 during the acute stroke period to 0.63 at six months after stroke) (Robinson *et al*, 1984*c*). This and subsequent studies (Robinson *et al*, 1984*c*; Parikh *et al*, 1987) suggested that physical impairment does not cause depression, but once depression occurs the most depressed patients remain the most impaired and the most impaired patients remain the most depressed. Sinyor *et al* (1986*b*) also found that, immediately after the stroke, depressed patients had a significantly lower functional status than non-depressed stroke patients. Furthermore, while non-depressed patients showed a slight increase or no change in functional status over time, depressed patients showed important reductions in functional status during the first months following stroke.

In conclusion, the relationship between PSD and physical impairment appears to be a complex interactive one. Acute post-stroke impairments do not seem to cause depression, but once depression occurs, physical impairments may perpetuate depression and/or depression may inhibit functional recovery from stroke. An important goal of future studies will be to determine whether early treatment of PSD interrupts this adverse interaction between depression and physical status.

### *Intellectual impairment*

Over the past ten years, there has been a growing interest in the relationship between depression and cognitive impairment. Elderly depressed patients without brain injury may show intellectual deficits (called 'pseudodementia' or 'dementia of depression') which improve with treatment of depression. Although the cause of this dementia remains unknown, there have been numerous studies which have shown significant relationships with age, ventricular size and other biological variables (Kellner *et al*, 1986; Jorm, 1986).

PSD has also been reported to produce a dementia of depression. Fogel & Sparadeo (1985) reported the case of a patient who developed, immediately after a stroke, a severe depression and marked cognitive deficits, which abated following treatment with tricyclic antidepressants.

We have also examined cognitive deficits in patients with PSD. In a study involving patients with restricted left hemisphere strokes, we found that both lesion size and depression correlated independently with severity of intellectual impairment (Robinson *et al*, 1986). In addition, over the course of a six-month follow-up, non-depressed patients showed improvements in Mini-Mental State Examination

(MMSE) (Folstein *et al*, 1975) scores, while depressed patients showed either no change or even a slight decline. Moreover, in the previously mentioned study examining 13 pairs of patients with and without post-stroke major depression matched for lesion size and location, depressed patients had a significantly lower (more impaired) MMSE score than non-depressed patients (Starkstein *et al*, 1988*c*).

In conclusion, patients with PSD may suffer more severe cognitive deficits than would be explained by the lesion *per se*. These cognitive deficits may last for the same duration as the PSD, and anecdotal reports have demonstrated that a significant recovery from neuropsychological deficits may occur after treatment with tricyclic antidepressants. As with physical impairments and depression, an important area of future research will be to demonstrate the impact of early treatment of PSD upon recovery from cognitive deficits.

### *Aphasia*

Benson (1973) suggested that language problems may lead to a secondary psychological reaction because of the understandable importance of language function to man. If that was the full explanation of PSD, however, any aphasic disturbance, regardless of whether it is primarily receptive or expressive in nature, might produce depression. Depression, however, has been shown in both anecdotal reports and systematic studies (Robinson & Benson, 1981) to be more common in patients with non-fluent aphasias (usually following lesions involving the left frontal lobe) than in patients having fluent or global aphasias (usually following lesions involving parietal temporal lobes).

The more fundamental issue, however, is whether the presence of aphasia increases the risk of stroke patients developing depression. In a recent study, we found that 9 out of 17 aphasic patients (53%) were depressed, while 38 of 86 non-aphasic patients (44%) with left hemisphere lesions were also depressed. Thus the frequency of PSD in aphasics was not significantly higher than in non-aphasic patients (Starkstein & Robinson, 1988*b*).

These findings suggest that the association between non-fluent aphasia and depression may be explained by the fact that both non-fluent aphasia and depression are produced by lesions in similar locations. Aphasia *per se* does not appear to produce depression, but rather aphasia and depression seem to be parallel processes which frequently coexist, depending upon the lesion location.

Even though aphasia is probably not causative of depression, there remain many important areas for future research, including the impact of PSD on aphasia and the effect of antidepressant treatment on the recovery from aphasia. It should also be remembered, however, that the diagnosis of depression requires a reliable assessment of the patient's mental state. Patients with moderate or severe comprehension deficits cannot be reliably examined and have been excluded from our studies.

### *Social functioning*

In our longitudinal studies of PSD, we have made quantitative assessments of social functioning using the Social Functioning Exam (SFE) and the Social Ties Checklist (STC) (Starr *et al*, 1983). While we found positive correlations between depression scores and SFE and STC scores (meaning that more severe depressions are associated with poorer social functioning), this correlation was relatively weak (Robinson *et al*, 1983*a*, 1984*b*). On the other hand, depression in hospital as well as physical and intellectual impairment were found to correlate significantly with social functioning at six-month follow-up (Robinson *et al*, 1984*c*, 1985*b*).

These findings indicate that impaired social functioning probably does not cause post-stroke depression, but once depression occurs, severe physical or intellectual impairments as well as depression can all negatively impact on the patient's future social functioning. These conclusions are also consistent with the findings of Feibel & Springer (1982), who reported that six months after stroke, 67% of 24 depressed patients had reduced or lost prior social activities, while only 43% of the 67 non-depressed patients had lost such activities. Moreover, Labi *et al* (1980) found that among 121 long-term survivors of stroke, social disability at home or elsewhere was not accounted for by age, physical impairment or neurological deficits.

## Biological markers

Ross & Rush (1981) were the first to demonstrate that patients with PSD may show an abnormal dexamethasone suppression test (DST) response (non-suppression). They also reported a return to normal suppression after successful treatment with tricyclic antidepressants.

The first systematic study, however, was conducted by Finklestein *et al* (1981), who examined 25 randomly selected stroke patients for the presence of PSD and abnormal response to dexamethasone administration. They found a strong association between abnormal DST results and the occurrence of moderate to severe depression, loss of appetite, and sleep disturbances. In a subsequent study, we replicated Finklestein's findings of a significant association between major PSD and non-suppression in DST in a group of 65 patients, but we also found a large number of false positives (30%) (Lipsey *et al*, 1985). This reduced the diagnostic confidence to only 50%. False positive results were related to large lesion volumes. Similar findings were reported by Reding *et al* (1985), who found abnormal DST results in 49% of patients, on average seven weeks after stroke. They also reported that extensive lesions were more likely to be associated with false positive DST results than smaller lesions.

In conclusion, while PSD patients may show non-suppression on the DST, the large number of false positives makes it difficult to interpret the results. The pursuit of biological markers of PSD is an important area of research, however, because these tests may some day be useful in the evaluation of patients who at present are difficult or impossible to examine, such as those with severe comprehension deficits.

## Treatment

Although Ross & Rush (1981) noted in anecdotal case reports the usefulness of tricyclic medication in the treatment of patients with PSD, most stroke patients do not receive medication or any other therapy for their depressive disorders (Feibel & Springer, 1982; Ebrahim *et al*, 1987; Wade *et al*, 1987). This may in part be due to the fact that mood disorders are not recognised in many stroke patients (Rosse & Ciolino, 1986).

We have reported the results of a six-week double-blind randomised treatment study of PSD using the tricyclic antidepressant nortriptyline (Lipsey *et al*, 1984). The 11 nortriptyline-treated patients who completed the study showed significantly greater improvement ($P<0.01$) in their Hamilton depression scores than 15 placebo-treated patients. Successfully treated patients had serum nortriptyline levels of 50–150 ng/ml. Contra-indications for this treatment study included heart block or severe conduction abnormalities, myocardial infarction within the past six months, significant prostatism, narrow angle glaucoma, and medications that might adversely interact with nortriptyline (like monoamine oxidase inhibitors). Three of the nortriptyline patients developed delirium with confusion, drowsiness, and sometimes agitation which abated when the drug was discontinued (Lipsey *et al*, 1984).

Similar findings were recently reported by Reding *et al* (1986). In this study, 27 patients participating in a stroke rehabilitation programme were randomised to receive either placebo or trazodone hydrochloride (with a target dose of 200 mg/day). The authors found a trend for patients with a clinical diagnosis of depression or abnormal Zung depression scores to improve more with trazodone than with placebo, while patients with abnormal DST results showed a significantly greater improvement with trazodone than with placebo. The fact that only two patients in the trazodone group were able to reach and maintain the target dose of 200 mg/day may explain the lack of more conclusive findings.

ECT is another treatment modality which has been shown to be useful in patients with PSD. Murray *et al* (1987) treated 14 PSD patients with ECT and reported a marked improvement in all but two cases. Side-effects were rare (only one patient suffered a transitory cardiac arrythmia) and none of the patients showed worsening of neurological status.

Although psychological treatments, including group and family therapy, have been used for PSD (Oradei & Waite, 1974; Watziawick & Coyne, 1980) the utility of psychotherapeutic techniques either alone or in combination with pharmacological treatment has not been examined in controlled treatment trials.

In conclusion, although the treatment of elderly stroke patients who have multiple medical problems is sometimes difficult, it has been shown in controlled trials that most post-stroke depressions can be effectively treated. This makes depression one of the most readily treatable conditions which occurs in stroke patients, and its treatment may improve not only mood but also physical and intellectual recovery.

## Pathogenesis

Although the cause of PSD remains unknown, the fact that several studies have found a statistically significant association between PSD and frontal or left basal ganglia lesions without any strong relationship to physical, intellectual or language impairment suggests that neurophysiological changes in these anterior brain regions may play a role in the aetiology of PSD.

Pickel *et al* (1974), Morrison *et al* (1979) and others have shown that the noradrenergic and serotonergic pathways whose cell bodies are located in the brainstem send axons anteriorly through the hypothalamus and basal ganglia to the frontal cortex. There, they arc around the corpus callosum and corona radiata running anteriorly to posteriorly through the deep layers of cortex arborising and sending terminal processes into the superficial cortical layers. Thus, lesions which interrupt these pathways in the frontal cortex or basal ganglia would interrupt more terminal fibres than a posterior lesion of the same size.

Reis and co-workers (Reis & Ross, 1973) proposed that injury to branches of the biogenic amine axons may lead to a shutdown of neuronal transmitter production in favour of protein synthesis for regeneration. Based on this idea, we suggested that frontal infarcts, as compared with parietal–occipital infarcts, may interrupt these pathways closer to their origin, thus leading to a more profound shutdown of noradrenaline (NA) or serotonin production and ultimately to a more severe depression. Since the biogenic amine pathways innervate widespread cortical and subcortical structures, interruption of transmitters to both cortical and diencephalic limbic structures could ultimately be expressed as depression.

Support for this suggestion comes from both rat and human studies. Laboratory investigations in rats have shown that ischaemic cortical lesions produce widespread depletions of NA throughout the brain (Robinson *et al*, 1975). In addition, this biochemical response to ischaemic lesions is lateralised. Right hemisphere lesions in rats produce depletions of NA, while comparable left hemisphere lesions do not (Robinson, 1979; Pearlson & Robinson, 1981).

Recent studies using PET in humans have similarly shown a lateralised biochemical response to cerebral ischaemia. Patients with right-hemisphere strokes had significantly higher ratios of ipsilateral to contralateral spiperone binding (in cortex, spiperone binds primarily to serotonin $S_2$ receptors) in non-injured (as determined from CT scan) areas of temporal and parietal cortex than patients with left-hemisphere strokes. In addition, among patients with left-hemisphere strokes, the binding ratio significantly correlated with depression (i.e. the lower the binding the greater the depression) (Mayberg *et al*, 1988). These findings are consistent with the results from rat experiments in which electroconvulsive treatments led to a relatively specific increase in density of cortical serotonin $S_2$ receptors (Kellar *et al*, 1981).

Based on these findings, a tentative hypothesis for the pathogenesis of PSD may be proposed. Left frontal or basal ganglia stroke produces a significant but less profound depletion of 5-HT and NA than right-hemisphere stroke. This partial depletion in the left hemisphere is not of sufficient magnitude to initiate a compensatory up-regulation of receptors like right hemisphere lesions. The resulting serotoninergic insufficiency may lead to the emotional and behavioural expressions of depression.

Other mechanisms have also been proposed. For instance, Ross & Rush (1981) suggested that PSD may be secondary to the involvement of the amygdala by brain injury. According to their hypothesis, if the lesion spared the temporal–parietal regions in the right hemisphere (homologue to Wernicke's area in the left hemisphere), the depressive affect generated by the right hemisphere amygdala lesion is able to cross from the right parieto-temporal cortex via corpus callosum to speech areas in the left hemisphere and produce a mood-congruent verbal–cognitive set. However, if the lesion included the right temporo-parietal junction, the transcallosal transfer of affective set may be abolished, and the patient, while showing autonomic symptoms of depression, is not able to formulate a mood-congruent verbal–cognitive set.

Although this hypothesis has not been experimentally tested, we have found that patients with stroke lesions in the right parietal cortex show higher frequencies of PSD (including verbal expression of depression) than patients having stroke lesions in any other location of the right hemisphere (Starkstein *et al*, 1989).

In summary, the aetiology of PSD remains uncertain, but the inability of any empirical study to find a 'reactive' cause for these depressions suggests that neurophysiological processes may play an important role. Further studies of the relationship between depression and biochemical and neurophysiological effects of stroke, as well as aprosodia, neglect and denial, are clearly needed.

## Post-stroke mania

Secondary mania refers to the occurrence of manic symptoms which meet DSM–III criteria for mania produced by toxic, metabolic or neurological disorders (Krauthammer & Klerman, 1978). Secondary mania is a relatively rare consequence of stroke, as evidenced by the fact that it is usually reported only anecdotally in the literature (Krauthammer & Klerman, 1978). By identifying patients based on the existence of mania, however, and only secondarily discovering that they had a brain lesion, we have recently studied 17 patients with secondary mania (nine had stroke, six had tumours and two had traumatic brain injury).

### Phenomenology

Clinical manifestations of post-stroke mania are almost identical to those found in primary mania (i.e. mania without known neuropathology) (Starkstein *et al*, 1987*b*). In a recent study comparing secondary manic patients with 25 patients having primary mania, we found no significant differences in the frequency of symptoms such as elation (100% for secondary manics v. 100% for primary manics), pressured speech (80% v. 76%), flight of ideas (92% v. 56%), grandiose thoughts (60% v. 53%), insomnia (87% v. 72%), hallucinations (33% v. 36%), or paranoid delusions (33% v. 20%) (Starkstein *et al*, 1987*b*).

This may, however, be a result of the fact that causes are usually identified by the existence of a manic syndrome rather than systematic examination of brain-injured patients.

## Onset and longitudinal evolution

Krauthammer & Klerman (1978) suggested that the term secondary mania only be applied to patients who develop mania immediately after the brain lesion. We, however, have studied patients who developed mania as long as two years after stroke (Starkstein *et al*, 1988*d*). Shukla *et al*'s (1987) report that the mean interval from brain injury to the onset of mania was a little less than three years in a group of 20 patients supports the contention that the interval from injury to onset of mania may be quite variable.

The age of onset for secondary mania appears to be primarily related to the aetiology of the brain lesion rather than there being a characteristic age of onset (i.e. twenties or thirties) as in primary mania. Patients with mania after traumatic brain injury tend to be younger than patients with mania after brain tumours, who themselves tend to be younger than those with strokes and mania.

Although no one has systematically examined the natural course of mania after stroke, some patients develop a bipolar disorder. In our recent study, we found that three of nine patients (33%) with post-stroke mania had episodes of depression before mania (Robinson *et al*, 1988*a*). Similar findings were reported by Shukla *et al* (1987), who found that 30% of 20 secondary mania patients had bipolar disease.

## Relationship with associated variables

### *Lesion location and size*

Cummings & Mendez (1984) reported two patients who developed mania following a right thalamic stroke. Based on these cases and a review of the literature, they concluded that secondary mania was a disorder related to damage of limbic areas of the right hemisphere. In our study of patients with secondary mania, eight of the nine patients with post-stroke mania had lesions in limbic or limbic-related areas of the right hemisphere (eight had lesions exclusively in the right hemisphere, while one had a left hemisphere lesion). The brain areas involved were the orbitofrontal and basotemporal cortex, thalamus and head of the caudate. In contrast, among a consecutive series of 31 patients with post-stroke major depression, 19 had left hemisphere lesions: this hemispheric distribution was significantly different from that of stroke patients with secondary mania ($P<0.01$) (Robinson *et al*, 1988*a*).

This study, however, did not indicate why most patients with right hemisphere strokes do not develop mania. In an effort to examine this issue, we compared our secondary manic patients who had positive CT scans (i.e. 11 of the 17) with a group of patients who had the same size, location and aetiology of brain injury but without mood disorder (Starkstein *et al*, 1987*b*). Patients with secondary mania had significantly higher bifrontal ratio (a CT scan measurement of subcortical atrophy at the level of the frontal lobes) and third ventricle to brain ratio (a measurement of atrophy in diencephalic areas) than the lesion-matched controls.

### *Family history*

Family history of affective disorder was significantly more common among patients with post-stroke mania (4 of 9) than among patients with post-stroke depression (3 of 31) ($P<0.05$) (Robinson *et al*, 1988*a*). Thus, the mania following stroke may be rare because it requires the existence of two factors, first a predisposing factor of either a genetic loading for affective disorder or subcortical atrophy, and second a lesion of a specific right-hemisphere limbic-connected structure.

## Treatment

Although there are no systematic studies on the treatment of post-stroke mania, almost all cases of secondary mania reported in the literature showed good response to treatment with the usual antimanic drugs (lithium and neuroleptics) (Starkstein *et al*, 1988*d*).

Some reports, however, have suggested that patients who develop secondary mania associated with a high frequency of seizure disorders may not be as responsive to lithium as patients with primary mania (Shukla *et al*, 1987). As indicated previously, anecdotal reports in the literature have found that some patients may respond to anticonvulsant drugs (Forrest, 1982; Pope *et al*, 1988).

## Pathogenesis

As with depression, the pathogenesis of mania following cerebral infarction remains unknown. The fact that secondary mania is significantly associated with two concurrent factors (i.e. a lesion of specific areas of the right hemisphere in combination with either a genetic loading for affective disorder or subcortical atrophy) suggests a specificity of pathogenesis. Shukla *et al* (1987) have suggested that the pathogenesis may involve seizure foci without hemispheric specificity. Cummings & Mendez (1984) and we ourselves, however, have been struck by the fact that almost all cases of post-stroke mania involved limbic or limbic-connected structures, which have important connections to the frontal lobe. We have hypothesised that the frontal lobe may play a central role in mediating both mood symptoms, through frontal limbic pathways, and somatic symptoms such as sleep, appetite and sexual disturbances, through frontal hypothalamic pathways (Starkstein *et al*, 1988*d*).

Other hypotheses have also been proposed. Swerdlow & Koob (1987) suggested that increased dopaminergic turnover in the nucleus accumbens may play a central role in the aetiology of mania. The cause of secondary mania, however, awaits further research.

## Future directions

Although the lesion technique for studying brain function in humans began in the 1800s, the use of this method for studying the mechanisms of affective disorder is only just emerging. There remain numerous important areas for investigation, from clinical trials, to the assessment of patients with aphasia or aprosodia, to the effect of various types and locations of injury on the clinical manifestations or longitudinal course of mood disorders.

Controlled clinical trials are the most likely to provide immediate practical results for the clinical management of affective syndromes following brain injury. Comparisons of the efficacy of various tricyclic depressants with monoamine oxidase inhibitors, lithium, or stimulant medications may provide important guidelines about what types of depression, perhaps related to location of injury, may be the most responsive to treatment. In addition, although the outcome measure of treatment studies of depressive disorders is usually depressive symptoms, recovery of speech, cognitive impairment, physical impairment, social functioning etc. may also show important outcome effects related to the treatment of depression. Cognitive therapy or other forms of individual psychological treatment, group psychotherapy, or peer support groups may also be effective forms of treatment for some types of post-stroke mood disorder.

Other important areas for further investigation include longitudinal assessment of the proportion of post-stroke depressions that become recurrent unipolar or bipolar affective disorders, the duration of symptoms and relapse rate of depressive syndromes associated with various locations of brain injury, the effect of various types of treatment on long-term relapse rate, and the changing relationship over time between social/psychological and biological factors of depression (Morris & Raphael, 1987).

Ultimately, however, the most important goal is to identify the mechanism of the various affective syndromes associated with cerebral infarcts. Although mechanism remains elusive for almost all of the emotional disorders of interest to psychiatrists, the fact that a neuropathological lesion may be a causative factor of a particular emotional disorder in humans leads to the development of an animal model. Since the animal model can be based on the neuropathological lesion underlying the emotional disorder rather than the animal's behavioural manifestations, arguments about whether the behaviour truly reflects an underlying emotional disorder can be partially avoided, and studies may be directed toward the neurophysiological responses which are elicited by the lesion.

We have tried to use this strategy for developing a rat model of post-stroke affective syndrome. This model has led to the identification of lateralised neurochemical changes which may be important in the aetiology of post-stroke mood disorders (Robinson, 1979).

In addition to the development of animal models, studies using new imaging techniques such as MRI and PET may also help to identify aspects of mechanisms in affective disorders. We have previously referred to our PET studies of serotonin receptors, but studies on many other ligand receptors as well as metabolic studies may also shed light on important brain regions or transmitter pathways involved in these disorders.

## Conclusion

Affective syndromes associated with cerebrovascular disease represent a developing area of research. Although many of the clinical characteristics have been reported in the literature for years, systematic studies of the frequency, course, relationship to lesion location and response to treatment have only recently been undertaken.

Several studies have now demonstrated that PSD is a frequent sequela of cerebrovascular disease, occurring in up to 50% of stroke patients. The longitudinal course of major depression is usually more than 12 months, but these depressive disorders respond to treatment with tricyclic antidepressants. Anterior lesions, particularly those involving the left frontal cortex and left basal ganglia, are strongly associated with major depression. Secondary mania, on the other hand, is a rare consequence of stroke, but one that usually responds to traditional affective disorder treatments. Post-stroke mania is strongly associated with lesions in limbic-connected areas of the right hemisphere, and perhaps with predisposing factors such as genetic loading, subcortical atrophy or seizure disorder.

Although the mechanism of these disorders remains unknown, some studies have suggested that changes in biogenic amines and limbic system input may play a role. There remain, however, many important areas for future investigation in this emerging field of neuropsychiatry.

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**Review Article**

# Prevention of Cardiovascular Disease by Psychological Methods

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It is generally recognised that much cardiovascular disease is the result of voluntary behaviour such as smoking cigarettes, and the pursuit of stress-prone lifestyles. Since these risks are primarily behavioural, it is appropriate to attempt to alter them, and hence reduce the risk of cardiovascular disease, using psychological methods, and such methods can reduce both biological and psychological stress-related factors. Studies of healthy populations, of those at increased risk, and of patients with clear cardiovascular disease have all shown that risk-related behaviour can be altered and, in some cases, the incidence of cardiovascular disease reduced. Future research will have to extend these findings, which were often on atypical populations, and confirm reduction of cardiovascular disease.

Epidemiological evidence shows that myocardial infarction and cerebrovascular stroke are more likely in people who smoke, who are overweight, who have high blood pressure or high serum cholesterol (e.g. Pooling Project, 1978), who do not exercise (Paffenbarger *et al*, 1983), who drink too much alcohol (Marmot, 1984), or who are aggressive and over-busy or depressed (Booth-Kewley & Friedman, 1987) or phobic (Haines *et al*, 1987). Cardiovascular disease, like other diseases, may also be more likely in those with poor social support (Berkman & Syme, 1979; Seeman & Syme, 1987). These risks can be powerful in themselves and, since they are believed to operate multiplicatively rather than additively (Truett *et al*, 1967), become increasingly so the more that are present. Furthermore, it is becoming clear that, at least in animal models, stressful environments interact with various predisposing factors, such as the animal's genetic make-up or a diet rich in saturated fats or salt, to increase markedly the degree of risk, or even the development of coronary atherosclerosis (see Manuck *et al*, 1986). Many of these factors are either directly or indirectly linked to modifiable behaviour, and expert bodies now frequently recommend that changing such behaviour should be the first step in reducing the risk of cardiovascular disease (Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure, 1986; Shepherd *et al*, 1987).

Since much of the risk relates to behaviour, no special justification is needed for maintaining that the proper approach to risk reduction is by changing that behaviour. Nevertheless, it may be helpful to comment on the pharmacological approach to the prevention of cardiovascular disease. There is no doubt that medication which, for example, is designed to reduce blood pressure or serum cholesterol, is highly effective in achieving the desired risk factor reduction and can in some instances lower the incidence of cardiovascular disease (Veterans Administration study, 1967; Lipid Research Clinics, 1984; Frick *et al*, 1987). Such findings are obviously important clinically. They also test the fundamental assumption underlying cardiovascular disease prevention, that altering a risk factor actually reduces the risk. At least under some circumstances this is clearly true.

However, medication cannot be the complete answer. The reasons are fourfold: medication is rarely appropriate in the primary prevention of disease (see below); even in those at heightened risk, the numbers of people involved make medication financially and practically unattractive; medication has been ineffective in the reduction of the effects of some of the commonest risks; and medication may produce an unacceptable level of side-effects. The operation of these factors can be seen, for example, in the pharmacological reduction of raised blood pressure. It would clearly be inappropriate to attempt to prevent high blood pressure by giving medication to a healthy normotensive population. It is doubtful if medication is appropriate for the large numbers of adults (perhaps 20% of the population) with mildly raised pressures. Treatment of this group by medication has proved disappointing and the reduction in risk has not matched the drop in pressure. For example, the recent exemplary MRC trial of the treatment of mild hypertension (Medical Research Council, 1985) failed to show reliable effects of adequate pharmacological treatment of mild hypertension on the rate of coronary heart disease in a controlled study of approximately 18 000 middle-aged hypertensives; there was a reduction in strokes, although they are comparatively infrequent in this age group. Over 15% of patients reported side-effects that required a change or withdrawal of medication (Medical Research Council, 1981). Many of these symptoms were apparently minor inconveniences such as a dry mouth or runny nose, but 20% of men, for example, reported impotence, which was presumably at least temporarily disturbing. There was also evidence of an increase in total mortality in women in the treated group. There is therefore a definite and well recognised need for effective methods of reducing those types of behaviour which increase the likelihood of cardiovascular disease, and increasing those that diminish it.

In considering the literature on altering the behavioural aspects of the risk for cardiovascular disease, I shall adopt a tripartite categorisation of preventative programmes: primary, secondary and tertiary. These terms are used in various ways in the literature. By primary I mean the altering of risk in those not known to be at increased risk, secondary refers to lowering the risk of those at raised risk and tertiary doing the same with those with clear evidence of cardiovascular disease. While it can be argued that one or other form of prevention is most important or likely to be most effective, it is probably most appropriate to regard them as complementary.

## Primary prevention

Primary prevention is appealing since, as Rose (1981) and others (e.g. Lewis *et al*, 1986) have cogently argued, even a tiny shift in a risk factor in the community can substantially reduce the total number of cases of a disease, since it will affect the large number of people at slight risk who make the greatest contribution to the total number of cases. Rose has calculated, for example, that people with cholesterol levels not usually considered of clinical relevance in fact, because they are so numerous, account for three times as many cholesterol-related deaths as those with markedly elevated serum cholesterol. The disadvantage of primary prevention is that many at little or no actual risk are required to change their behaviour to save the unidentifiable few. However, it can be argued that only by altering community attitudes and behaviour can one realistically alter risky behaviour, since so many of these types of behaviour are maintained by the physical and social environment. If this is unaltered then interventions, even if directed at those at high risk, will founder under all the other pressures that lead to the high-risk behaviour.

Although primary prevention programmes are concerned almost exclusively with modifying behaviour, the formal impact of psychological theory and practice has, in some instances, been slight. For example, the approach to behaviour change adopted in the well known WHO-sponsored campaign (World Health Organization, 1986) to reduce coronary heart disease risk in over 60 000 factory workers in four countries was very unsophisticated in its use of adequate behavioural methods. It is, then, unsurprising that the results showed disappointing changes in risk factors and consequently unimpressive reductions in coronary heart disease.

The psychological input is much more explicit in the various community intervention projects, the earliest and best known example of which is the North Karelia Project (Puska *et al*, 1985). Almost two decades ago North Karelia had the highest rate of cardiovascular disease in Finland, and public and political pressure led to a substantial research project to reduce the classical risk factors. This very influential study showed that information from local medical practitioners and others, combined with limited media campaigns, could produce changes in smoking, diet (and hence serum cholesterol) and blood pressure. It has also been argued that there was a larger reduction in coronary heart disease in North Karelia between 1969 and 1982 than could be expected by chance (Tuomilehto *et al*, 1986). However, the initially high level of coronary heart disease in North Karelia and the steady decline in coronary heart disease in most of Finland in the same period make these results hard to interpret. The benefits may have been due to more widespread changes in behaviour or to the specific North Karelia programme.

The more recent American community-based interventions probably indicate the future direction of such programmes more accurately than the North Karelia study. These sophisticated projects attempt to change behaviour in many ways and at many levels, and it may be helpful to consider their procedures and results in terms of a simple model of risk factor reduction. Most of these programmes are primarily based on the provision of information, and the process through which this leads to a reduction in disease may be seen as consisting of the following sequence of changes:

(a) increased knowledge
(b) attitude change
(c) behaviour change
(d) risk factor reduction
(e) reduction in cardiovascular disease.

This is obviously an oversimplification, as attitude and behaviour change can occur without an increase in knowledge (e.g. when something becomes fashionable), but it does indicate that the fundamental premise of such interventions is that knowledge about risk and its modification is needed before people can change their attitudes to the risky behaviour and decide to change it. If they succeed this may lead to a reduction in the risk factor, which may in turn lead to a reduction in disease. It can be seen that the chain is long and may fail at any stage, so that only very modest reductions in disease might occur even if each stage was even 50% effective. These calculations may be a little pessimistic, since most programmes are directed at several risks, and, if the effects multiply as hoped, the whole may be more than the sum of the parts. Perhaps even more importantly, the numbers of people involved mean that even modest reductions in risk could greatly reduce the number of people killed or disabled by cardiovascular disease.

This approach can be seen in an elegantly designed field demonstration in three small California communities near Stanford (Farquhar *et al*, 1977). One town received no intervention, while in the other two, media campaigns were directed at smoking cessation, exercise, dietary change and blood pressure measurement and control. In addition, in one town the media interventions were supplemented with face-to-face interviews with participants at high risk. The media campaigns increased the population's knowledge about the risk factors for coronary heart disease, and led to changes in diet and reductions in plasma cholesterol and in overall cardiovascular disease risk as assessed by an epidemiologically-derived risk equation. Reducing smoking, however, appeared to require additional personal contact and behavioural interventions. The greatest increase in knowledge on some risk factors was in the community that had the face-to-face intervention with high-risk participants, but low-risk participants who were not seen face-to-face also showed increased knowledge. This suggests that, as one might suspect, the effects of interventions disseminate between members of the community, blurring the distinction between primary and other forms of intervention. This study also emphasised the limitations of media campaigns alone, a finding that has greatly influenced studies currently under way in Stanford and elsewhere.

In terms of the model of the link between information and coronary heart disease endpoints, this study documents most links in the chain up to, but not including, the final and vital one of a demonstrable reduction in morbidity and mortality. A very much larger study which seeks to do this is now nearing completion, the Five Cities Project (Farquhar *et al*, 1984). This study is broadly similar to the earlier one but provides more direct face-to-face interventions through the use of community resources as well as media campaigns. At least two other major studies are also running, in Pawtucket (Lasater *et al*, 1984) and Minnesota (Blackburn *et al*, 1984), which share many of the features of the Stanford studies but differ in their emphasis on such factors as the use of specially trained lay volunteers, the active co-operation of local supermarkets and restaurants, and programmes directed at schoolchildren. When these report it may be possible to gauge whether the alteration of these risk factors does indeed confer the expected advantages in health. The techniques used in these studies, in which there may be no contact between the change agents and the recipients, is very different from the usual clinical situation. However, if it is an effective way of producing change in large numbers of people, these studies may have a much wider relevance than simply the reduction of cardiovascular disease, important though that is. With advances in epidemiology we are increasingly aware of high-risk behaviour and at-risk groups. The various community projects provide a powerful model for altering such behaviour.

## Secondary prevention

Psychological approaches to secondary prevention rely mainly on face-to-face contact between health professionals and the individual at risk. The risks that have been the subject of most psychological interventions are primary hypertension, Type A behaviour, various diet-related risks and smoking.

### Primary hypertension: stress management

The psychological approaches to hypertension have taken two forms: the altering of stress-related processes and the reduction of the known risk factors for hypertension – obesity and the excessive consumption of alcohol and salt. Most psychological effort has been directed at stress-related processes. The proposition that stress has a causal role in the production or maintenance of primary hypertension draws support from two lines of research. Firstly, there is a developing body of evidence suggesting that lower animals when placed in stressful situations show elevations of pressure that eventually persist even after the animal is returned to the original benign environment. For example, mice reared in isolation show elevations in pressure when forced to interact with other mice, and with sufficient exposure sustained high blood pressure and cardiac damage are seen (Henry *et al*, 1975). Similar studies also show that stress combines with other physical risk factors such as a genetic predisposition to hypertension or increased salt in the diet to produce high blood pressure (Anderson *et al*, 1983). With careful selection of the parameters, it is possible to demonstrate that two factors, say heredity and a stressful environment, can be required to produce elevations in pressure (Lawler *et al*, 1981). Secondly, studies with humans show that challenging cognitive tasks produce marked blood pressure rises in many normotensive subjects, and even larger reactions are seen in hypertensive patients. The offspring of hypertensives also show unusually large responses, even if their blood pressure at rest is apparently normal (Falkner *et al*, 1979). These findings point to the critical role of the interaction of psychological and biological risk factors.

Biofeedback was once used quite extensively as a stress reduction method but this, in part, reflected a confusion about the process involved in learning to control a visceral response. The most popular model of biofeedback was the motor skills model, which, in essence, asserted that using feedback to control a visceral response was very similar to using naturally occurring feedback to control a motor skill, such as playing darts. From this perspective, biofeedback does not enable one to control stress and hence lower pressure but to control pressure directly and bypass the factors that are causing the problem. This technological approach to a complex problem is attractive, perhaps seductively so, but almost two decades of research have undermined it more or less completely. The motor skills model failed even the most elementary tests, since biofeedback was not needed to produce most of the autonomic changes observed when subjects voluntarily controlled functions such as heart rate (Johnston, 1976) or blood pressure (Steptoe, 1976). Subjects can achieve similar control with simple instructions. Furthermore, changes in automatically innervated functions were not directly mediated but the result of changes in muscle or respiratory activity.

As well as failing at the theoretical level, cardiovascular biofeedback has proved entirely unnecessary clinically. There is no convincing evidence that biofeedback of blood pressure leads to a greater reduction in pressure than much simpler procedures that do not involve feedback (e.g. Blanchard *et al*, 1979; Frankel *et al*, 1978). As a result, the use of blood-pressure feedback has almost entirely ceased. There has been a recent interest in the use of finger-temperature feedback, presumably to reduce sympathetic arousal, in the treatment of hypertension (Blanchard *et al*, 1986). However, this has not been studied rigorously.

Stress management has withstood well over a decade of research, much better than biofeedback. In a recent review, I calculated that stress management was more effective than experimental control procedures in lowering pressure in mild primary hypertension in 50% of the 25 controlled studies then available (Johnston, 1987). Relaxation-based stress management was better than simple attendance at a clinic (Patel & North, 1975), non-directive psychotherapy (Taylor *et al*, 1977), elaborate physiological measurement (Bali, 1979), skin conductance biofeedback (Zurawski *et al*, 1987) and a carefully constructed placebo based on mild mobility exercises (Irvine *et al*, 1986). Not surprisingly, pharmacological treatments were slightly more effective than stress management (Goldstein *et al*, 1982; Jacob *et al*, 1986), but, as we have seen, their use in mild hypertension is under severe challenge. The effects of stress management have been shown to last for at least four years (Patel *et al*, 1985), although in some recent studies it appears that blood pressure also drops in control patients, given enough time (Agras *et al*, 1987; Chesney *et al*, 1987). A number of different procedures have been used in these various studies and there is no strong empirical basis for choosing any one over another. In general it appears that the best results have been obtained in studies in which the relaxation training is live rather than taped, the patients are encouraged to practise regularly at home, and there is an explicit effort to teach the patient to apply the techniques to manage stress in daily life. While it has not been studied in hypertension, relaxation training given by health professionals has been found to be superior to that provided by specially trained community volunteers in the treatment of the aversive effects of chemotherapy (Carey & Burish, 1987).

Much of the treatment of stress in hypertensives uses very much simpler procedures than those used in the current cognitive/behavioural treatments of psychological problems such as anxiety or depression. It is probably appropriate that a psychological therapy offered to a large group of people united by a physical and not a psychological problem should be simple and readily offered by many professions. Furthermore, it should not be assumed that simple treatments only have simple effects (nor indeed should the converse be assumed). I have recently argued that complicated changes in behaviour and thinking can follow even from apparently simple procedures such as relaxation training (Johnston, 1986). At the experimental level, we have shown that relaxation training can alter cognitive processes so that subjects recall more positive than negative words in an incidental recall task after they have relaxed (Peveler & Johnston, 1986). Despite the apparent power of such simple procedures, it is likely that particular hypertensives with more complex problems will benefit from specific cognitive or behavioural interventions directed at these problems. While little evidence on this point is available, it is probable that interventions that reduce subjective arousal in hypertensives (whether it be anxiety, anger or some other emotion) will also reduce their blood pressure.

Blood pressure is highly variable and very responsive to environmental factors. It therefore cannot be assumed that the pressures obtained in the clinic are representative of pressures at other times and in other places. A minority of studies of stress management have included either home or ambulatory measurement, with mixed findings. Some have found that stress management lowers pressure in the home and workplace (Southam *et al*, 1982; Chesney *et al*, 1987), while others have failed to do so, even in studies in which pressure was reliably reduced in the clinic (Irvine *et al*, 1986). This may well be because blood pressure is often much lower at home, even without treatment. Nevertheless, this is a critical issue which must be resolved.

The other critical issue is, of course, the effect of stress management on health. Part of the impetus for using stress management is that the pharmacological solutions have not affected coronary heart disease convincingly, at least in the mildly hypertensive. The effects of stress management on mortality and morbidity has not been examined, and the scale of the enterprise is daunting, but Patel *et al* (1985) have shown encouraging, and statistically reliable, reductions in coronary heart disease in a study of only 200 men at increased risk of coronary heart disease. A similar trend was found in a very recent study (Patel & Marmot, 1988).

### Primary hypertension: weight, salt and alcohol

An alternative behavioural route to the lowering of blood pressure is to alter the physical factors which contribute to raised pressure. It is generally held that there is incontrovertible evidence that *obesity* leads to heightened pressure in some people (Chiang *et al*, 1969), and that substantial weight reduction leads to profound drops in pressure in the grossly obese (Maxwell *et al*, 1984). More modest weight reductions allow mildly obese patients to cease medication for long periods (Langford *et al*, 1985), and can lower pressure as effectively as medication (MacMahon *et al*, 1985) and reduce left ventricular hypertrophy (MacMahon *et al*, 1986). Contrary results have been reported (Haynes *et al*, 1984), but the weight reductions obtained in these studies were slight and the hypertension borderline. Surprisingly, the psychological input in many of these studies is modest, most studies relying simply on dietary advice from physicians and dietitians, although the more recent studies appear to be using behavioural programmes (e.g. Langford *et al*, 1985). The evidence with obese normotensives suggests that such programmes will be more consistently effective than advice alone (Brownell & Wadden, 1986), thus increasing the potential for cardiovascular benefit.

The consumption of *salt* has long been seen by interested members of the general public as a major factor in hypertension. This message may have been oversold, since there is a continuing lively debate between hypertension specialists on the exact role of sodium and its importance in hypertension (McCarron, 1985; MacGregor, 1985). It is almost certainly true that the virtual elimination of salt from the diet will lower pressure, but few would find the resulting diet either palatable or practical. The effects of more manageable levels of salt restriction are contentious and at best appear to be slight, even when salt is reduced to the desired level (Grobbee & Hofman, 1986). It has been suggested that there is a subclass of 'salt-sensitive' hypertensives, but they have proved difficult to identify in advance of salt restriction.

The evidence linking *alcohol* and blood pressure is steadily growing (MacMahon, 1987), and it is now clear that high levels of alcohol consumption are associated with heightened pressure (Shaper *et al*, 1981). Alcoholics show a reduction in pressure when they cease drinking, which reverses on relapse (Saunders *et al*, 1981), and blood pressure drops with the cessation of alcohol consumption in both hypertensives (Potter & Beevers, 1984) and normotensives (Puddey *et al*, 1985). There does not as yet appear to be a comprehensive controlled trial of the effects of an alcohol restriction programme in hypertensives.

A recent major study attempted to reduce weight, salt consumption and alcohol consumption in hypertensives taken off medication (Stamler *et al*, 1987). The major outcome criterion was return to medication in the subsequent four years. The programme was generally successful, since 39% of the treated group remained off medication as compared with 5% of the untreated. Weight was reduced, as was the consumption of very large amounts of salt, but there was little effect on alcohol consumption. The authors do not appear to have offered a specific behavioural programme. This is an important line of enquiry and there is an obvious need for studies of the effects of systematic behavioural programmes to reduce alcohol consumption in hypertensives.

## Type A behaviour

The most researched, discussed and, on occasions, attacked behavioural risk factor is Type A, or coronary-prone, behaviour. This complex behaviour pattern, comprising excessive competitiveness, sense of being under time pressure, and easily provoked hostility, was first shown to be an independent risk factor for coronary heart disease in 1975 (Rosenman *et al*, 1975) and achieved widespread acceptance, in North America at least, over the next few years. Since then the picture has grown increasingly confused, with technically satisfactory studies both confirming (Haynes *et al*, 1980), and disconfirming the original findings (Johnston *et al*, 1987). Similarly, studies relating Type A to the extent of occlusion of the coronary arteries of patients with suspected coronary artery disease have had very mixed results (Dimsdale *et al*, 1979; Williams *et al*, 1980). A recent meta-analysis suggests that Type A does relate, albeit rather weakly, to coronary heart disease (Booth-Kewley & Friedman, 1987), particularly if the Structured Interview method of determining Type A is used. More detailed studies of the components of Type A suggest that the hostility component is particularly powerful in predicting coronary heart disease (Matthews *et al*, 1977; MacDougall *et al*, 1985).

There is no consensus on how Type A causes coronary heart disease. Many investigators operate on the working hypothesis that it leads to harmful increases in sympathetic arousal and cardiovascular reactivity. It is quite easy to find contrary evidence to this position (Myrtek & Greenlee, 1984), but it prevails, primarily because of the absence of a plausible alternative.

The current uncertainties about the mechanism of Type A risk obviously pose problems in designing interventions. Ideally, the intervention should concentrate on those components that carry the risk for coronary heart disease. Present evidence suggests that overall ('Global') Type A and Hostility should be altered by any intervention thought likely to be of value in reducing coronary heart disease. Most of the efforts to alter Type A behaviour in the otherwise healthy have been little more than feasibility demonstrations, with the best work done in patients following a myocardial infarction. There are exceptions, however. Roskies and her colleagues have reported a careful study of Type A executives, and Gill and co-workers an intriguing study of senior army officers.

Roskies *et al* (1986) regard Type A behaviour as a form of excessive behavioural and physiological reactivity and have employed an elaborate form of stress management to reduce this behaviour. This procedure was more effective than either aerobic exercise or weight training in altering both Global Type A and Hostility, but all procedures were equally ineffective in altering the cardiovascular response to challenging laboratory tasks. This may not be serious, since, as we have seen, it is not clear that such responses relate to Type A behaviour in any important way. Gill *et al*'s (1985) study is an offshoot of a study of Type A change following myocardial infarction which will be discussed in the section on tertiary prevention. Briefly they were concerned to see if a programme that altered Type A in post-myocardial infarction patients also did so in healthy middle-aged Type A men. In addition, they sought to determine if Type A reduction had any deleterious side-effects since, informally at least, some have maintained that Type A behaviour is necessary for effective survival in modern society. Both Global Type A and Hostility were altered in healthy middle-aged officers of the rank of lieutenant colonel and colonel, and there was no deterioration in their effectiveness, as determined by their brother officers.

The alteration of aspects of Type A is therefore possible. So far, Type A has been assessed using the Structured Interview, the first, and arguably best, measure of Type A, and also by various questionnaires filled in by the participant, or occasionally, an informant. Most of these measures might well be susceptible to falsification by participants who know that their behaviour is being measured, and future studies will have to establish that Type A behaviour changes reliably in a wide range of real life situations. There is at present no evidence that Type A change alters the risk of coronary heart disease in otherwise healthy Type A subjects, and such evidence will be difficult to acquire until we have a clearer understanding of the mechanisms through which Type A affects the heart, and of which components of the behaviour pattern predict coronary heart disease and under what circumstances.

## Multiple risk factor modification

Smoking and cholesterol reduction have been studied most persuasively in the context of multi-factor risk reduction studies. A good example of such is the widely known and very impressive Oslo study of reductions in serum cholesterol and smoking (Hjerman *et al*, 1981). In this study 600 men with raised serum cholesterol and elevated scores on a composite risk score, based on cholesterol, smoking (almost 80% smoked) and blood pressure, were given individual advice by a specialist team of physicians and dietitians. Compared with a randomised control sample, there was a 13% reduction in serum cholesterol, plus other beneficial changes in blood lipids, and a 45% reduction in smoking. The incidence of fatal and non-fatal myocardial infarction and sudden death in the subsequent five years was reduced by almost 50%. Detailed analyses suggested that much of this reduction was due to the effects of the change in serum cholesterol, smoking having rather less effect than predicted. The effectiveness of this study may well illustrate the importance of using experienced specialist staff with a commitment to changing risk factors. The Oslo group appears to have used many of the procedures which are also used in the more obviously psychologically-based studies, such as direct specific advice given more than once, individual dietary plans, involvement of spouses, and feedback of serum cholesterol levels. It may be significant that the best results in the otherwise disappointing WHO study, mentioned previously, came from the Belgian centres, who also used specialist teams to reduce the risk factors (Kornitzer *et al*, 1983).

The positive results of the Oslo study contrast with the poor effects of the MRFIT project on reducing coronary heart disease (Multiple Risk Factor Intervention Trial, 1982). In this study over 12 000 men at increased risk of coronary heart disease were randomly allocated either to normal care or to programmes directed at reduction in smoking, dietary change to lower serum cholesterol, and medication to control high blood pressure. Complex behavioural programmes were used to alter smoking and diet. Despite the finding that the risk factors were successfully reduced, there was not a reliable reduction in mortality from coronary heart disease over the seven years of the study. On the face of it this might seem to suggest that behavioural methods of risk reduction, even when appropriately and apparently successfully applied, may not in fact reduce risk, a finding that casts a doubt over the whole endeavour. The authors suggest that the difficulty may, in part, be due to changes in the risk factors in the control group, which lead to a much lower than predicted mortality. The drop in risk may reflect changes in medical practice and public attitudes during the study. They also present evidence suggesting that the anti-hypertensive medication may have actually increased the risk of cardiac-related deaths in some patients and offset the beneficial effects of the substantial reductions in smoking and serum cholesterol.

The value of a systematic psychological input was very clear in a recent (Lovibond *et al*, 1986) study of men at high risk for coronary heart disease as assessed by a composite function based on weight, blood pressure, physical fitness and cigarette smoking. The 25% at highest risk of over 300 men received behavioural programmes of three levels of intensity. In the most intense programme the participants received regular feedback on their coronary risk status, detailed health educational material, and a detailed personalised behavioural programme for altering the risk factors, which was implemented under close supervision. The less intensive programme was similar but the implementation of the programme was not so closely directed. In the least intensive programme subjects received only a general description of the behavioural programme and did not keep detailed records of their own efforts nor were they given detailed feedback on their risk factors. Participants in all groups met frequently over a six-month period. In general, while all three interventions were effective, the most intensive produced the greatest change. The size of changes was impressive: overweight participants lost over 10 kg, those with high blood pressure decreased SBP by over 10 mm Hg, and there were marked increases in physical fitness. With respect to the function used to assess risk at the end of the intervention, the most intensive group had decreased their risk by 44% and the least by 23%. As the MRFIT study indicates, it is not prudent to assume that such reductions will actually turn into lives saved and disease avoided; nevertheless, this is an impressive demonstration of the power of a very vigorous and systematic behavioural programme in reducing the risk factors for coronary heart disease.

### Tertiary prevention

From a psychological perspective the role of prevention after there is definite evidence of major coronary artery disease, such as following a myocardial infarction, presents an interesting and complex challenge. On the one hand after an infarction the major risk factors (except cigarette smoking) may be of much less importance in predicting recurrence than is the state of the myocardium, while on the other the patients have had a very dramatic experience that must be a highly motivating warning of the urgent need to change their behaviour. Many of the psychological interventions after myocardial infarction are concerned with reducing the psychological sequelae of the infarction, such as anxiety, depression or undue restriction in activities. Such interventions (reviewed by Johnston, 1985) can be important in patients with demonstrable behavioural problems, but have, at least explicitly, little to do with prevention of a further myocardial infarction. However, stress, by activating sympathetic mechanisms, may increase the likelihood of myocardial infarction or sudden cardiac death in the diseased heart.

Behavioural efforts have been directed primarily at Type A change, stress reduction and increasing physical fitness. Rather surprisingly, despite the importance of cigarette smoking in patients who have experienced a myocardial infarction, there does not appear to have been a randomised trial of cessation methods after an infarction. Burling *et al* (1984) suggest that up to 50% of smokers cease or reduce smoking after a myocardial infarction, and this is associated with a clear reduction in mortality and morbidity. Patients are more likely to stop with vigorous advice given more than once (Burt *et al*, 1974). There is evidence that patients with definite cardiovascular disease are more likely to give up smoking than people with other smoking-related conditions (British Thoracic Society, 1984). Adding a booklet or nicotine chewing gum to advice did not improve cessation in 1550 patients attending clinics for smoking-related illnesses, including cardiovascular diseases (British Thoracic Society, 1983).

Before considering the long-term effects of interventions after myocardial infarction, it is worth commenting on the psychological factors operating immediately after the infarction when the patient is still under intensive care. Lown and his colleagues have demonstrated very elegantly that stress can lower the threshold for fibrillation and induce potentially fatal arrhythmias in the ischaemic myocardium of the dog (Verrier & Lown, 1984). Such effects could occur at any time in the diseased heart but might be most likely in the period shortly after a myocardial infarction. There have been very few interventions during this period but Gruen (1975) reports that an eclectic form of psychotherapy led to patients experiencing less potentially dangerous arrhythmias during their time in coronary care than did standard hospital care. They also spent less time in hospital. This suggests that the use of simple stress management at this time is worth exploration.

Physical fitness programmes are a major part of most myocardial infarction rehabilitation schemes. This is based primarily on the relationship between physical fitness and coronary heart disease and the haemodynamic benefits of the physical training. Unfortunately, it has proved very difficult to show that such programmes actually reduce the risk of future myocardial infarction. Substantial studies, such as the National Exercise and Heart Disease Project, have failed to show any convincing reduction in myocardial infarction (Shaw, 1981). In part the problem may relate to the difficulty in maintaining physical fitness over a prolonged period of time.

### Type A behaviour and stress reduction

We have already seen that much controversy surrounds the claim that Type A predicts the incidence of coronary heart disease in the apparently healthy. The evidence on Type A as a risk factor after a myocardial infarction is also contentious. Among recent studies, Case *et al* (1985) failed to find any evidence that Type A predicted the recurrence of a myocardial infarction, Powell & Thoresen (1985) found that some aspects of Type A did predict recurrence, and Ragland & Brand (1988) found that Type B individuals were more, rather than less, likely to die of a subsequent infarct. Nevertheless, a major study suggests strongly that an intervention designed to alter Type A behaviour reduces the recurrence of myocardial infarctions. Friedman, Thoresen and colleagues (Friedman *et al*, 1984, 1986) have developed a very complex package for altering all aspects of Type A behaviour. This package attempts, using a wide range of cognitive/behavioural techniques, to alter the patient's thinking, behaviour, environment and physiological responses. In a manner that will be familiar to those who use cognitive methods to treat depression and anxiety, the patient's underlying assumptions about personal worth and professional goals are examined, specific types of behaviour incompatible with Type A behaviour are encouraged, and role-playing, modelling etc. are used to modify competitive or aggressive behaviour.

In a study lasting over four years, this package was used with groups of up to ten patients who had experienced at least one myocardial infarction. The groups initially met weekly and then less frequently, but patients remained in therapy for the complete period of the study. Approximately 600 patients received this intervention, while a randomly selected group of approximately 300 met regularly to receive high-quality cardiovascular care and assistance with the psychological effects of the myocardial infarction, but not any systematic attempt to alter Type A behaviour. The intervention group met on average 38 times and the controls 33. The results were dramatic. Type A behaviour was assessed by a modified version of the Structured Interview, patient self-report, and reports from the patient's spouse and an informant at work. Both Global Type A and Hostility decreased more in the intervention than the control group. When the recurrence rate in all patients who entered the study was examined, the annual percentage of cardiac events was 4.97% in the control group and 2.96% in the intervention group, nearly a 50% reduction. In addition, participants who showed substantial change in Type A by the end of one year were four times less likely to have a myocardial infarction in the subsequent two years. The primary effect was on non-fatal myocardial infarction, although in a subsidiary analysis Friedman *et al* (1986) argue that mortality was also reduced after the patients had been in the programme for some time. The results were not due to differences between the groups in other risk factors or medication. When subjects were stratified on the severity of their myocardial infarction, it was clear that the main effect of treatment was on those with less severe myocardial damage.

This study clearly shows the benefits that may accrue from treatment that is directed at altering the Type A behaviour and thinking of patients at high risk for myocardial infarction. Obviously, very many issues remain unresolved by this one study. It is likely that a complex treatment lasting many hours over four years contains irrelevant aspects which could be pruned, perhaps with significant savings in time or with the substitution of more powerful procedures. The control group probably provided an adequate control for general attention, but is unlikely to have controlled for the many complex effects of the cognitive/behavioural package. It would, therefore, be premature to conclude that it was the changes in Type A that mediated the cardiovascular disease outcome. The data are supportive, but Type A was the main behaviour measured and so only Type A could be seen to change. It is at least plausible that the cognitive/behavioural intervention altered other factors such as mood, level of stress and perhaps even social support.

The likelihood that simpler, quicker and cheaper intervention can reduce the risk of recurrence of myocardial infarctions is supported by an interesting attempt to deal with stress in the year following an infarction (Frasure-Smith & Prince, 1985, 1987). In this study slightly over 200 patients in an intervention group were regularly contacted by phone, and a questionnaire about general health was administered. If symptoms of stress were detected the patients were visited by a nurse counsellor who took whatever action seemed appropriate, which could involve referral to a specialist agency. A control sample received normal care. In the following year the groups differed slightly in their stress symptoms, and the intervention group had a 50% reduction in mortality. It is not entirely clear that this was due to stress reduction. The randomisation procedure in this study was unsatisfactory and may have led to social class differences between the treatments, with unpredictable effects on outcome. In addition, the authors did not monitor medication use, which raises the suspicion that compliance with medication could have been altered by the intervention. However, one would not have expected what must surely have been a minor difference in medication to effect survival reliably in a small sample. These interpretative problems must be resolved in future studies, and detract from the value of this study, which does at the least draw attention to the advantages of directing interventions at those patients who are reporting problems, and then tailoring the intervention to that problem.

### Comment

Before drawing conclusions from this overview of behavioural methods of reducing the risk of cardiovascular disease, it might be helpful to make some general comments.

There are three main problems with the behavioural approaches to altering high-risk behaviours. Firstly, many of the interventions appear costly and labour-intensive. While one might hope that future research will develop more efficient procedures, and ways of using less expensively trained personnel, nevertheless psychological interventions are likely to remain expensive if costed over the comparatively brief period during which they are delivered. However, it is more appropriate to cost them over the period during which they are effective. If the effects persist, as it appears they do, then the costs become trivial. Secondly, even the best cognitive/behavioural methods are far from perfect. For example, there are large numbers of people whom we are unsuccessful in training to manage their stress, alter their diet or cease smoking. Perhaps most critically we are not particularly good at motivating people appropriately who might initially be reluctant to change their behaviour, although there are procedures for increasing motivation for treatment (Miller, 1985). Unless the patient wishes to change, most behavioural programmes are ineffective. Obviously the community-based primary prevention programmes have a vital role to play in this respect. Finally, as with any programme of risk factor reduction, it cannot be assumed that even successful programmes of behavioural change will lead to actual reductions in cardiovascular disease. This has only been demonstrated convincingly in a few rather special instances. It is unrealistic to hope that it will be possible to mount major trials of the effects of the modification of all the behavioural risk factors on cardiovascular disease. Nevertheless, more evidence of the real benefits of behavioural risk factor reduction carried out under realistic field conditions must be gathered. It would be unreasonable and ultimately counterproductive if it became accepted dogma, in the absence of empirical evidence, that reduction in the behavioural risk factors is beneficial. This is particularly important in primary prevention, where the aim is to change the behaviour of apparently healthy people at low risk of cardiovascular disease.

These possible restrictions in the potency or applicability of psychological interventions in this field are offset by powerful advantages. The most obvious advantage is the total inappropriateness of anything other than a psychological intervention to deal with some of the risk factors, such as smoking, Type A behaviour or poor social support. More subtly, it is a powerful advantage that the psychological interventions are usually much less specific than their pharmacological equivalents. Most weight reduction regimes, for example, will attempt to reduce the intake of fat, particularly animal fats, and increase fibre, and this can be expected to reduce the lipid-related risks. Even more importantly, stress-related treatments are not finely targeted with respect to physical endpoints or biological risk factors, and it is reasonable to assume that interventions that reduce stress in an individual or community will affect many stress-related risk factors and reduce the effect of the more biological risk factors, such as elevated serum cholesterol. In this case stress management may have more effect on coronary heart disease than would be predicted from the change in the target risk factor, as appears to have happened in the studies of blood pressure reduction by Patel *et al* (1985) and Patel & Marmot (1988). It may also affect other stress-related illnesses. Finally, behavioural interventions such as stress management are believed to have few negative side-effects and are therefore acceptable to patients. They are unlikely to increase one risk factor while diminishing others, as may happen with medication.

## Conclusion

Much cardiovascular disease is associated with voluntary behaviour and hence people should change or avoid such behaviour to reduce their risk. There is evidence that they can do so when healthy and at low risk, when at high risk, and after they have manifest cardiovascular disease. It appears that both the classic biological risk factors and more obviously psychological factors can be altered by procedures based on the principles and methods of psychology, and there is limited, but encouraging, evidence that such alterations reduce the likelihood of cardiovascular disease.

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# Mood Disorder Following Cerebrovascular Accident

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Depression appears to be common after stroke, and therefore may have a bearing upon rehabilitation. To examine whether the depression is due to a specific brain lesion, or is reactive to the consequent disability, this study looked at the frequency and associations of depressed mood in a stroke rehabilitation unit in-patient population, unselected for site of lesion. Depression affected 50% of the patients; history of previous psychiatric disorder and cerebrovascular accident appeared to be important risk factors. There were hemispheric differences in the relationships between measures, with both the site-of-lesion and reactive viewpoints being upheld.

Despite agreement on an increased risk of mood disorder following stroke, there remains uncertainty about its aetiology and management. The seminal work by Robinson and co-workers (Robinson & Coyle, 1980; Robinson & Szetela, 1980; Robinson & Price, 1982; Robinson *et al*, 1984) found an association between depression and left frontal lesions as shown by computerised tomography (CT). This finding was attributed to hemispheric lateralisation of neurotransmitters which effect emotional responses. Social and physical disability were implicated to a lesser degree (Robinson *et al*, 1984). Nortriptyline was effective in a clinical trial with selected cases (Lipsey *et al*, 1984). Others have reported an association between depression and right hemisphere lesions (Lishman, 1968; Folstein *et al*, 1977), or noted differences in the expression of affect by side of lesion (Ross & Rush, 1981; Ross, 1981; Finkelstein *et al*, 1982).

There have also been reports of significant associations between depression and disability (Ebrahim *et al*, 1987; Wade *et al*, 1987). Rehabilitation has been recommended as the most effective treatment for post-stroke depression (Isaacs *et al*, 1976; Charatan & Fisk, 1978; Anderson & Kottke, 1978; Freibel & Springer, 1982).

Critically, the research supporting a specific association between lesion and post-stroke depression has excluded those with prior stroke or psychiatric illness, and has selected patients for site of lesion. Studies which have not found this association lacked brain imaging (Ebrahim *et al*, 1987; Wade *et al*, 1987), and accounted for little of the variance in depression (House, 1987).

The objectives of the present study were to investigate the frequency, presentation and associations of mood disorder in a stroke rehabilitation population.

## Method

A case–control study of patients admitted to the Queen Elizabeth Hospital Stroke Rehabilitation Unit in Toronto was conducted over an 18-month period ending in spring 1987. Patients with depression (cases) and without (controls) were compared on demographic, psychiatric (cognition and depression), radiological and functional measures.

All patients, except the medically unstable, were referred to the study by staff physicians. When compliant, these patients were assessed on admission to the study, and reassessed four months later or on discharge from the stroke unit.

### Psychiatric assessment

Cognitive ability was assessed using the Mini-Mental State Examination (MMSE) (Folstein *et al*, 1975). An empirically derived score, 15 out of 30 points, was used as a cut-off for entry into the study. This permitted informed consent and capacity to comply with interviews.

Depression was assessed using the Schedule for Affective Disorders and Schizophrenia (SADS) (Spitzer & Endicott, 1975), the Zung Self-rating Depression Scale (SDS) (Zung, 1965), and the Geriatric Depression Scale (GDS) (Brink *et al*, 1982). The Hamilton Rating Scale for Depression (HRSD) (Hamilton, 1960) was completed by the interviewer, based on the SADS interview and behaviour observations.

### Radiological assessment

Site and size of lesion were determined from medical records, including investigations conducted in the active treatment hospital. Available CT scans were re-read by a radiologist, blind to psychiatric findings, to obtain the following: number and specific site(s) of lesion; distance of each lesion from the frontal pole; and volume of lesion(s) as a proportion of total brain volume (Houser *et al*, 1982; Modic & Weinstein, 1983).

### Functional assessment

The Barthel Index (BI) (Mahoney & Barthel, 1965) is a measure of function, focusing on ability to conduct

TABLE I
*Demographic data for cases, controls, and total sample*

| | *Cases (n=47)* | *Controls (n=32)* | *Total sample (n=87)* |
|---|---|---|---|
| Male sex: %[1] | 57 | 72 | 63 |
| Mean (s.d.) age: years[1] | 63.7<br>(14.9) | 64.4<br>(11.5) | 63.3<br>(13.7) |
| Canadian-born: %[1] | 51 | 63 | 59 |
| Caucasian: %[1] | 91 | 91 | 91 |
| Education[1] | | | |
| Below grade 12: % | 28 | 44 | 33 |
| grade 12: % | 47 | 25 | 29 |
| Above grade 12: % | 26 | 28 | 28 |
| Marital status[1] | | | |
| Single: % | 30 | 22 | 29 |
| Married: % | 53 | 63 | 54 |
| Widowed: % | 17 | 16 | 17 |
| Positive psychiatric history: %* | 25 | 9 | 25 |
| Previous CVA positive: %[1] | 32 | 34 | 32 |

1. Non-significant differences cases *v*. controls.
*Significant differences cases *v*. controls ($P<0.05$).

TABLE II
*Clinical characteristics of cases, controls, and total sample*

| | *Cases (n=47)* | *Controls (n=32)* | *Total sample (n=87)* |
|---|---|---|---|
| Mean (s.d.) length of stay: days | | | |
| Acute hospital** | 49.7<br>(43.7) | 29.7<br>(17.4) | 42.3<br>(36.4) |
| QE Hospital | 120.6<br>(74.0) | 81.0<br>(50.0) | 94.8<br>(62.0) |
| Time since stroke** | | | |
| Mean (s.d.): days | 97.1<br>(69.8) | 58.1<br>(31.4) | 82.1<br>(58.5) |
| Median: days | 78 | 44 | 62 |
| Hemisphere of lesion[1] | | | |
| Bilateral: % | 11 | 9 | 10 |
| Left: % | 30 | 37 | 36 |
| Right: % | 60 | 53 | 54 |
| Functional disability | | | |
| Initial mean (s.d.) BI score** | 41.8<br>(16.4) | 54.5<br>(18.3) | 47.1<br>(17.7) |
| Follow-up mean (s.d.) BI score[1] | 74.8<br>(10.1) | 81.2<br>(9.1) | 77.4<br>(10.2) |
| Cognitive impairment | | | |
| Initial mean (s.d.) MMSE score[1] | 25.3<br>(3.6) | 26.6<br>(3.6) | 25.8<br>(3.7) |
| Follow-up mean (s.d.) MMSE score[1] | 25.3<br>(3.6) | 26.6<br>(3.6) | 25.8<br>(3.8) |
| Mean (s.d.) depression scale scores | | | |
| Initial SDS** | 46.1<br>(10.8) | 34.9<br>(5.9) | 41.3<br>(10.4) |
| Initial GDS** | 14.5<br>(5.5) | 7.9<br>(4.7) | 12.0<br>(7.5) |
| Initial HRSD** | 10.0<br>(4.6) | 4.7<br>(2.2) | 7.8<br>(4.5) |
| Follow-up SDS** | 44.0<br>(7.8) | 34.6<br>(6.1) | 40.4<br>(7.4) |
| Follow-up GDS** | 14.6<br>(6.4) | 6.5<br>(4.6) | 11.3<br>(5.6) |
| Follow-up HRSD* | 9.9<br>(4.2) | 4.4<br>(2.2) | 7.7<br>(3.8) |

1. Non-significant differences cases *v*. controls ($P<0.05$).
*Significant differences cases *v*. controls ($P<0.05$).
**Significant differences cases *v*. controls ($P<0.01$).

activities of daily living. Scored out of 100 points, a low score indicates greater disability. This scale was administered monthly by the nursing staff of the stroke unit.

The relationship between depression scores and other factors was examined using analyses of variance on the total sample. Bivariate relationships between categorical and ordinal variables were examined using non-parametric tests (e.g. $\chi^2$, Spearman's $R$), and between continuous variables using Student's $t$-test. All analyses were conducted using the Statistical Package for Social Sciences (SPSS Inc., 1983).

## Results

Over the period examined, 106 patients were admitted to the stroke unit. Of these, 19 were excluded: six could not provide informed consent (two due to severe aphasia, two due to cognitive deficit, two due to language other than English), five were short-stay, four were medically unstable, and four refused to participate. Complete intake data were available on the remaining 87 patients. Based on the SADS interview, 47 met research diagnostic criteria (RDC) for major or minor affective disorder (cases), and 32 had no psychiatric disorder (controls); eight had other psychiatric disorders and were included in the total sample but not in case–control analyses. Initial descriptions of the total sample and case–control contrasts are presented in Tables I and II.

### Contrasts of cases versus controls

As shown in Table I, case and control groups were not significantly different demographically, nor on history of previous cerebrovascular accident (CVA). Significantly more cases did report a history of psychiatric illness, predominantly depressive illness ($\chi^2_{(1\text{ d.f.})}=3.87$, $P<0.05$).

As shown in Table II, cases had significantly higher depression scores on all three measures on first assessment, had longer length of stay in the acute treatment hospital, were first seen after a longer interval post-stroke, and were more disabled according to scores on the Barthel Index. There were no significant differences between cases and controls on the cognitive measure (MMSE), or in the proportions with aphasia, dysarthria, or hemiparesis.

On follow-up (Table II), depression scores remained significantly different between cases and controls, and length of stay in Queen Elizabeth Hospital was significantly longer for cases. Functional scores (BI), however, now did not discriminate between cases and controls. On reassessment with SADS, one control met RDC for a minor depression, one case initially meeting RDC for major depression improved to minor depression status, and two with minor depressions recovered. That is, the two groups remained largely stable.

**Total sample analyses**

Bivariate analyses were conducted on the relationships between clinical measures (functional disability (BI), cognitive impairment (MMSE), and depression scores (SDS, GDS, HRSD)), and between clinical scales and demographic variables (age, education, length of stay in acute hospital and time since stroke).

*Initial assessment.* Pearson product moment intercorrelations between depression scales were positive and significant ($R = 0.62$–$0.80$, $P < 0.001$). However, the three depression scales were negatively correlated with BI scores (HRSD, $R = -0.18$, $P < 0.05$; SDS, $R = -0.33$, $P < 0.01$; GDS, $R = -0.33$, $P < 0.01$), indicating an association between the severity of depression and functional disability. None of the depression scales was significantly related to cognitive impairment (MMSE scores). As SDS and GDS were highly correlated, and did not differ in relationships with other variables, only findings on GDS and HRSD scales are subsequently reported.

*Follow-Up.* The correlations between depression scales remained significant ($R = 0.47$, $P < 0.05$). Neither was significantly related to MMSE (GDS, $R = -0.08$; HRSD, $R = -0.07$), but the relationships of depression scales to other measures differed. The HRSD scores were significantly correlated with length of stay at Queen Elizabeth Hospital ($R = 0.36$, $P < 0.05$), but not with BI ($R = -0.11$, *NS). Conversely, the GDS scores were significantly correlated with BI* ($R = -0.34$, $P < 0.05$), but not with length of stay at QEH ($R = 0.13$, NS). Intercorrelations between MMSE, BI and length of stay at Queen Elizabeth Hospital were all non-significant at discharge ($R$ range $-0.27$ to $-0.02$, all $P > 0.10$).

Correlations between age and clinical measures were all non-significant, and education was associated with MMSE scores only ($R = 0.23$, $P < 0.05$). Length of stay in the acute hospital was correlated with BI only ($R = -0.24$, $P < 0.05$). Time since stroke was significantly correlated with disability scores on the BI ($R = -0.33$, $P < 0.01$), and with the depression measure HRSD ($R = 0.24$, $P < 0.05$). Correlations of initial and follow-up scores within measures were all positive and significant (GDS, $R = 0.65$; HRSD, $R = 0.60$; MMSE, $R = 0.77$; BI, $R = 0.69$; all $P < 0.01$).

Analyses of variance were conducted with initial depression scores as dependent variables, and side of lesion, functional disability, previous psychiatric history and previous history of stroke as independent variables, controlling for time since stroke. The results varied by depression scale. For HRSD scores, only reported psychiatric history was a significant factor ($F^1_{61} = 4.66$, $P = 0.035$), with mean scores higher for patients with a previous psychiatric illness ($t_{(27\ \text{d.f.})} = -2.39$, $P = 0.024$). For the GDS, a significant interaction between side of lesion and history of CVA was observed ($F^1_{61} = 4.63$, $P = 0.035$).

Analyses of variance on GDS were repeated separately for right-side and left-side lesions. For patients with lesion on the *right* side, a history of CVA was a significant factor in predicting GDS scores ($F^1_{40} = 7.55$, $P = 0.009$), with the means test indicating greater depression among those with a prior CVA (GDS, $t = 3.0$, $P = 0.005$). For patients with lesion on the *left* side, there was a significant interaction between functional disability and psychiatric history ($F^2_{19} = 9.55$, $P = 0.001$). Among patients with no reported psychiatric history, functional disability was a significant factor ($F^2_{19} = 3.78$, $P = 0.045$). In this subgroup, GDS scores indicated greater depression among the more disabled patients (i.e. those with BI scores $< 50$) ($t_{(21\ \text{d.f.})} = -2.8$, $P < 0.05$). For patients with left-side lesion who had a psychiatric history, disability did not account for additional variance in GDS scores.

**Further comparisons according to side of lesion**

CT scans were read blind to psychiatric status. Of the 55 scans which could be located and read, 45 revealed visible lesions: 11 patients with lesions confined to the left hemisphere, 27 with lesions confined to the right hemisphere, and 7 with lesions in both hemispheres. Analyses were conducted on the subsample of 38 patients with lesions restricted to one hemisphere.

There were no significant differences between left lesion and right lesion patients on analyses of demographic or clinical measures. Bivariate analyses conducted separately for right and left lesion groups, however, indicated differences in relationships between measures.

In the left hemisphere sample, there were significant relationships between GDS and distance from the frontal pole ($R = -0.74$, $P < 0.01$), and between HRSD scores and percentage of brain tissue infarcted ($R = -0.63$, $P < 0.05$). Correlations of disability scores (BI and MMSE) with measures of distance from the frontal pole and percentage tissue infarcted were small and non-significant ($R$ range 0.02 to 0.22, all $P > 0.10$).

For patients with right hemisphere lesions, there was a small, but statistically significant, positive correlation between the HRSD and percentage of total brain volume infarcted ($R = 0.35$, $P < 0.05$). Correlations of depression scores and disability measures with distance from the frontal pole were non-significant ($R$ range 0.04 to $-0.18$, all $P > 0.10$).

Contrasts of cases versus controls are presented separately for patients with lesions in the right and left hemisphere, in Tables III and IV. Within the left hemisphere sample, comparison between cases and controls revealed significant differences on depression scores and distance from the frontal pole only. Comparison between cases and controls within the right lesion sample indicated significant differences on depression scores, length of stay in both acute and rehabilitation hospital, time since stroke, and initial (but not follow-up) BI scores.

TABLE III

*Left hemisphere lesions: demographic and clinical data for cases, controls, and total subsample*

| | *Cases (n=4)* | *Controls (n=7)* | *All (n=11)* |
|---|---|---|---|
| Male sex: %[1] | 50 | 100 | 82 |
| Mean (s.d.) age: years[1] | 62.5 | 68.0 | 64.6 |
| | (28.6) | (8.5) | (17.0) |
| Mean (s.d.) time since stroke: days[1] | 80.8 | 64.0 | 77.0 |
| | (57.3) | (41.2) | (43.7) |
| History CVA: %[1] | 25 | 43 | 36 |
| Psychiatric history: %[1] | 50 | 29 | 36 |
| Mean (s.d.) length of stay: days | | | |
| Acute hospital[1] | 63.5 | 32.2 | 45.4 |
| | (30.8) | (31.3) | (31.0) |
| QE Hospital[1] | 169.6 | 99.8 | 117.8 |
| | (103.0) | (60.4) | (74.4) |
| Mean (s.d.) disability scale scores | | | |
| Inital BI score* | 37.5 | 58.0 | 50.0 |
| | (2.9) | (12.5) | (15.4) |
| Follow-up BI score[1] | 50.0 | 65.0 | 57.2 |
| | (4.1) | (19.1) | (16.4) |
| MMSE score[1] | 25.7 | 23.0 | 24.9 |
| | (3.0) | (5.6) | (4.6) |
| Mean (s.d.) depression scale scores | | | |
| GDS* | 19.0 | 8.4 | 12.0 |
| | (6.3) | (3.2) | (6.9) |
| HRSD* | 12.4 | 3.1 | 8.3 |
| | (7.1) | (2.0) | (5.9) |
| Lesion | | | |
| Mean (s.d.) distance from frontal pole: cm* | 3.1 | 6.4 | 4.0 |
| | (1.8) | (2.4) | (2.9) |
| Mean (s.d.) % brain volume* | 16.7 | 33.7 | 29.9 |
| | (12.2) | (19.1) | (18.0) |
| Total fraction of brain infarcted[1] | | | |
| <20%: % of sample | 75 | 43 | 64 |
| 20–40%: % of sample | 25 | 28 | 27 |
| >41%: % of sample | 0 | 29 | 9 |

1. Non-significant differences cases v. controls ($P>0.05$).
*Significant differences cases v. controls ($P<0.05$).
**Significant differences cases v. controls ($P<0.01$).

## Discussion

Depression was found to be common, affecting more than 50% in this patient sample. While this overall rate agrees with findings from an acute treatment centre in Baltimore (Robinson *et al*, 1984), fewer in the present study had a major depression. In the Baltimore series, about 40% of the patients met DSM-III criteria for depression, with roughly equivalent proportions of major and minor illness. The distribution in the present study, using RDC, was 10% major and 40% minor depression.

TABLE IV

*Right hemisphere lesions: demographic and clinical dat for cases, controls, and total subsample*

| | *Cases (n=18)* | *Controls (n=9)* | *All (n=27)* |
|---|---|---|---|
| Male sex: %[1] | 60 | 71 | 63 |
| Mean (s.d.) age: years** | 62.0 | 50.0 | 59.0 |
| | (12.4) | (15.6) | (15.5) |
| Mean (s.d.) time since stroke: days** | 123.0 | 44.0 | 102.6 |
| | (62.2) | (16.9) | (61.9) |
| History CVA: %[1] | 35 | 25 | 35 |
| Psychiatric history: %[1] | 22 | 25 | 23 |
| Mean (s.d.) length of stay: days | | | |
| Acute hospital** | 64 | 24 | 54 |
| | (50.4) | (5.3) | (46.8) |
| QE Hospital** | 149 | 48 | 125 |
| | (71.1) | (24.5) | (79.5) |
| Mean (s.d.) disability scale scores | | | |
| Initial BI score* | 37.5 | 56.4 | 43.2 |
| | (9.7) | (15.5) | (14.0) |
| Follow-up BI score[1] | 51.8 | 73.0 | 56.3 |
| | (17.7) | (24.0) | (20.0) |
| MMSE score[1] | 24.5 | 27.7 | 25.5 |
| | (4.2) | (2.0) | (4.0) |
| Mean (s.d.) depression scale scores | | | |
| GDS score** | 14.6 | 6.7 | 12.2 |
| | (5.7) | (2.2) | (6.7) |
| HRSD score** | 9.4 | 3.4 | 7.5 |
| | (3.1) | (1.6) | (3.9) |
| Lesion | | | |
| Mean (s.d.) distance from frontal pole: cm[1] | 4.7 | 5.1 | 4.7 |
| | (2.4) | (2.5) | (2.5) |
| Mean (s.d.) % brain volume[1] | 28.0 | 29.1 | 27.6 |
| | (16.3) | (16.9) | (16.5) |
| Total fraction of brain infarcted[1] | | | |
| <20%: % of sample | 33 | 67 | 44 |
| 21–40%: % of sample | 56 | 33 | 48 |
| >41%: % of sample | 11 | 0 | 8 |

1. Non-significant differences cases v. controls ($P>0.05$).
*Significant differences cases v. controls ($P<0.05$).
**Significant differences cases v. controls ($P<0.01$).

### Influences of disability and history

On initial assessment, cases had longer time since stroke and greater functional disability. Also, lengths of stay in both acute and rehabilitation hospitals were longer for cases, albeit without differences in the frequency of paresis or cognitive impairment. Bivariate analyses indicated significant negative correlations between measures of depression and disability on first test, and in multivariate analyses retained some explanatory power. In comparisons of patients with right and left hemisphere lesions, again there were differences in initial but not follow-up disability scores. These results appear ambiguous; however, they may be explicable on the grounds that disability can be both cause and effect. Physical disability may initially contribute to depression. When this occurs, depression scores may continue to reflect functional disability to some degree, even with rehabilitation. Improvements in functional ability, as measured by the Barthel Index, however, do not appear to augur well for mood states. The case and control groups in this study remained stable over the follow-up period, despite improvements in function and the passage of time. Moreover, the correlations between disability and depression measures were not large, and the multivariate analysis suggested that this association is likely to be overshadowed by a history of psychiatric illness.

Prior psychiatric illness and history of CVA were critical factors in accounting for variance in depression scale scores, and a history of psychiatric illness was more frequently reported for cases. Again, however, these effects differed by scale and by side of lesion. Differences noted here highlight the effect of excluding patients with previous history from study samples. As the frequency of psychiatric and stroke history in the present series was high (25% with psychiatric history, 30% with prior stroke), it is apparent that their exclusion would have made this a less representative sample of the Queen Elizabeth Hospital stroke population.

### Importance of lesion location

With the inclusion of CT scan data it is apparent that the site-of-lesion hypothesis cannot be discounted. Given the small number of scans available for a second reading, the contrasts were limited to those between cases and controls with a visible lesion in one hemisphere, and a comparison of the distributions of other variables between hemispheric groups. Even with these small samples, however, there were apparent differences by site and hemisphere of lesion.

Left hemisphere cases and controls differed on the measures of depression, and the distance of lesion from the frontal pole. Although the sample of left hemisphere patients was quite small, depression scores were negatively correlated with the distance from the frontal pole and the amount of brain tissue infarcted. For the left hemisphere patients, small lesions located in the frontal region were associated with more severe depression than larger, posterior lesions.

Among patients with lesions in the right hemisphere, depression scores were not related to distance from the frontal pole; however, they were positively correlated with proportion of brain infarcted. Differences between right hemisphere cases and controls were significant on measures associated with time since stroke, length of stay in hospital, and initial functional disability, but not on lesion measures.

Although interpretation of these data is limited by the small samples, the effect of specific site of lesion is more prominent among the left hemisphere patients than the right. For patients with right hemisphere lesions, the effects of time since stroke and initial functional disability appear to be more important. These findings support the specificity-of-lesion hypothesis, at least among left hemisphere patients, and concur with earlier reports (Robinson & Price, 1982).

### Implications of interactions

Several of the above analyses were complicated by interactions between the index of depression, patient medical history, and characteristics of the stroke event. These are the product both of using more than one measure, and of examining effects by multivariate methods. While the results seem perplexing rather than conclusive, they probably represent a complex reality.

Significant correlations were observed between the depression scales, and cases had consistently higher depression scores. Yet, there were differences between the Hamilton, Geriatric and Zung depression scales in relation to other factors. Some of these differences may be attributed to the method of scoring. The Hamilton is clinician-rated and based on symptoms elicited in interview, while the Zung and Geriatric depression scales require response to direct questions. The scales, however, *may* measure different aspects of depression, and this should be further examined.

Findings of interactions between clinical measures, psychiatric history, previous stroke and side of lesion are of interest, as they allow for speculation regarding explanations. These may generate useful and testable hypotheses. For example, the finding that history of stroke was a significant factor in explaining variance of the GDS scores of *right* side lesion patients, with greater depression among those with a prior stroke, may be due to an earlier *left frontal* infarction. This is suggested by the findings in the small sample of patients with left hemisphere lesions noted on CT scan. Likewise, the finding that functional disability was a factor in depression scores of patients with *left* side lesions only in the absence of a psychiatric history, suggests that either the aetiology or the symptom presentation may distinguish these patients.

Patients examined in this study differed from those showing a dominant association either between lesion and depression (Robinson *et al*, 1984) or between residual disability and depression (Ebrahim *et al*, 1987). Previous series were selected from active treatment settings, while the present series was from a rehabilitation setting. This probably accounts for the few patients in our series with lesions confined to the left frontal region, and for the low correlation between cognitive function and depression scores.

## Conclusion

From the contradictory findings regarding the correlates of mood disorder, it is apparent that the prediction of depression following stroke is a complex undertaking. Risk factors identified depend on the characteristics of the population examined and time of examination, and account for little of the total variance in post-stroke depression. Assessment methods, and particularly CT scan data, are critical.

Continued study of mood disorder in this population is warranted, as it indicates the interactive nature of disability following stroke. Clearly, the next step is to determine whether there are two or more types of depressive syndrome following stroke, and what the correct interpretation might be.

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# Frequency of Symptoms in Melancholia (Depressive Illness)

M. HAMILTON

Symptoms of depression were quantitatively recorded using a rating scale, for 239 men and 260 women. The frequency of the various symptoms were similar for the sexes, with a high frequency for anxiety, both psychic and somatic. The results show that the symptoms of depressive patients differ from those found in the classic descriptions.

The traditional descriptions of clinical syndromes are based on work carried out at the end of the 19th century, largely on patients admitted to mental hospitals. With the development of psychiatric facilities, clinicians now see many patients who present symptoms which are much milder than those which require admission to hospital. Furthermore, the increasing acceptability of psychiatric illness and treatment by our patients means that they come for treatment at a much earlier stage of their illness than before. Of course, milder forms and earlier stages of illness are not the same. For these reasons, clinicians should continually look at the phenomena which concern them. They can do this by the traditional way of observation and description, but in the last few decades they have had made available to them those quantitative techniques, based on psychometric theory, which can offer new insights. This paper is concerned with the symptomatology of depressive illness based on the data recorded on a rating scale.

For this work to have any meaning, it is necessary to describe how the patients were selected, but before this a few definitions will be particularly helpful. The word 'depression' is used with three different meanings and discussions on the subject are still often confused by a lack of understanding of what is meant.

(a) Depression is a particular mood associated with the reaction to a loss. We become depressed when a friend or relative dies, or when we lose our occupation. It is a reaction also to a potential loss or the failure of an expected gain, e.g. when we do not get a promotion we had expected or we fail in an examination. Such depression is a normal human reaction and is recognised as such. It is clearly related to the events which have produced it, not only in time but also in intensity: a great loss makes us very depressed and a minor loss produces only a slight reaction.

(b) We use the word 'depression' also to describe a pathological mood. It is one which can be present in many mental disorders, e.g. schizophrenia, obsessive–compulsive disorder, and even as a consequence of somatic disease, e.g. influenza. The simplest distinction between normal and abnormal depressed mood is that the latter will be unrelated to external events, or be out of proportion to them. Morbid depressed mood is most characteristic of affective disorders. It is accompanied by other changes which indicate its nature. Thus the patients will feel that everything is worthless, that their life has been pointless, that the future is hopeless and that they will never recover. In other words, their thinking and judgement are disturbed. Some patients, who are sufficiently fluent and capable of expressing themselves, will say that the abnormal mood is clearly distinguishable from dejection, unhappiness and misery. In what way this is so, they cannot explain in a manner which can be understood, because our comprehension of the moods and feelings of others depends on our ability to recognise the similarity between our own experience and what they are indicating by words and behaviour. It is true that it is not always easy to distinguish between normal and abnormal depression, but that does not signify that there is no fundamental difference between them or that there is no point in making the distinction. An analogy will help to make the point clearer. In the spectrum we can distinguish between green and blue, but there is a point between them where it cannot be said that the colour is definitely either one or the other. That does not signify that there is no real difference between these two colours or that there is no point in trying to distinguish between them.

(c) Depression is also used to signify a syndrome, a collection of symptoms that form a coherent pattern. This is what is sometimes called a depressive illness (the better name of melancholia having been allowed to lapse), and is one which has a clear course, which usually is recurrent, and has clear intervals between each phase. It is known to have a genetic component and there is reasonably good evidence of an underlying biochemical disturbance.

## Method

### Selection of patients

The patients studied were all diagnosed as suffering from a primary depressive illness (melancholia), although a few were secondary to physical disease such as influenza or diabetes mellitus. In none of the patients did the symptoms appear in the course of schizophrenia, or of hysterical or obsessional states. In particular, patients diagnosed as suffering from 'schizoaffective' disorders were excluded. All of the patients would be diagnosed with major depressive disorder according to DSM-III (American Psychiatric Association, 1980) except, possibly, for those few with acute onset whose illness had brought them for treatment within less than a month.

One condition excluded is that which might be called 'excessive depressive reaction'. There is a type of emotional persons who react excessively to circumstances. When things go well with them they are full of the joy of life, but when things go wrong they fall into the depths of despair. Nowadays, they then come to the psychiatrist. It is important to recognise that these persons are not 'ill', even though they have come to the clinic as 'patients'. The loss they have experienced may sometimes seem trivial to another, but it is important to them, and their reaction to it is consonant with their personality. Psychiatrists tend to dislike such 'patients', who seem so often to be excessively importunate, and they use various denigratory terms to describe them, the most innocuous of which is 'emotionally labile personality'. We recognise that they are not ill because their condition is firmly linked to their circumstances. If the loss is replaced or restitution occurs, then immediately all is well with them. The tears are replaced by smiles, the despair by hope, the suicidal thoughts by the joy of living. Because we do not regard these persons as being ill, this does not mean that we refuse to give them such help as we can. They need comfort, reassurance and help with their problems. It is my opinion that, above all, drugs should not be prescribed for them.

Most of the patients were untreated when first seen, but a few had received either antidepressant drugs for less than a week, or inadequate doses, e.g. 10 mg of a tricyclic twice daily, for a longer period.

### Ratings scale for depressive symptoms

The data in this paper are derived from ratings on a scale (Hamilton, 1960, 1967). Over 95% of the patients were rated either by myself alone or with another. The rest were rated by various colleagues who had been trained by me. Not all of the patients were under my care and therefore, for various reasons, it was not always possible to obtain full information. As the work progressed, some of the variables were deleted and new ones added. The cases were split into two groups for cross-validation, but where the findings agreed, the results reported are from the total numbers. Where the results were obtained from fewer than 100 cases, the numbers will be given.

The symptoms were recorded quantitatively in the rating scale, complete absence counting as zero score and 'doubtful or trivial' as one point. For symptoms difficult to quantify, two points signifies 'clearly present'; for the others a symptom when present was given two points for 'mild', three for 'moderate' and four for 'severe'. When two raters worked together, their scores were summed to give ranges of 0–4 and 0–8. Scores from a single rater were doubled. There are two ways of converting such scores into 'present' or 'absent'. In the first, a score of zero counts as 'absent' and anything over that, i.e. however trivial the symptom may be, counts as 'present'. In the second, a score of two counts as 'present', i.e. the symptom is at least 'mild', and anything less as 'absent'. The first part of the following description uses the first method.

## Results

### Frequency of symptoms, however trivial

*Common symptoms*

It is the tradition that the three typical symptoms of depressive illness (melancholia) are depressed mood, guilt and suicide; but what is meant by 'typical'? A distinction has to be made between what is most common, and what is characteristic in the sense of making the diagnosis of depressive illness very probable and other diagnoses very improbable. The clinician who concentrates his attention on the 'characteristic' symptoms is then going to miss the diagnosis quite frequently.

For the main 17 symptoms on this scale, there were 239 records for the men and 260 for the women. The three commonest symptoms, both for males and females, in this series were depressed mood (100%), loss of interest and working capacity (99% or over), and (psychic) anxiety (97–98%) (Table I). The next three commonest symptoms were, in males, somatic symptoms of anxiety (87%), initial insomnia (difficulty in falling asleep) (84%), and suicidal symptoms (thoughts and acts) (82%). In females, fatigability and loss of energy occurred in 94%, somatic symptoms of anxiety in 87% and gastrointestinal symptoms in 84%. The last consists predominantly of loss of appetite; constipation is a relatively uncommon symptom. This may seem surprising, because most patients will declare that they are constipated, but this statement is merely expressing a popular belief rather than describing a true symptom. If they are asked whether the constipation has appeared with the onset of illness or become worse at that time, they will usually say that this is not so, but that the constipation has always been present.

When we include the next two symptoms in order of incidence, which are in the males fatigability (general somatic) (82%) and gastrointestinal (loss of appetite) (80%),

TABLE I

*Frequency of symptoms present however slight*

| | *Males* | | | *Females* | |
|---|---|---|---|---|---|
| *Item no.* | *Symptom* | *%* | *Item no.* | *Symptom* | *%* |
| 1 | Depressed mood | 100.0 | 1 | Depressed mood | 100.0 |
| 7 | Loss of interest | 99.6 | 7 | Loss of interest | 98.8 |
| 10 | Anxiety psychic | 97.1 | 10 | Anxiety psychic | 97.7 |
| 11 | Anxiety somatic | 87.4 | 13 | Somatic general | 94.2 |
| 4 | Insomnia initial | 83.7 | 11 | Anxiety somatic | 87.3 |
| 3 | Suicide | 82.0 | 12 | Somatic gastrointestinal | 83.5 |
| 13 | Somatic general | 82.0 | 3 | Suicide | 80.4 |
| 12 | Somatic gastrointestinal | 80.3 | 4 | Insomnia initial | 77.7 |
| 6 | Insomnia delayed | 74.1 | 2 | Guilt | 72.7 |
| 2 | Guilt | 71.5 | 6 | Insomnia delayed | 71.9 |
| 5 | Insomnia middle | 71.5 | 17 | Weight loss | 68.8 |
| 17 | Weight loss | 69.0 | 9 | Agitation | 68.1 |
| 9 | Agitation | 68.1 | 5 | Insomnia middle | 66.5 |
| 14 | Libido | 59.8 | 14 | Libido | 49.6 |
| 8 | Retardation | 52.3 | 8 | Retardation | 43.5 |
| 15 | Hypochondriasis | 33.1 | 15 | Hypochondriasis | 25.8 |
| 16 | Loss of insight | 28.0 | 16 | Loss of insight | 21.9 |
| 20 | Paranoid symptoms | 25.1 | 19 | Depersonalisation | 21.1 |
| 21 | Obsessional symptoms | 13.3 | 21 | Obsessional symptoms | 20.7 |
| 19 | Depersonalisation | 10.9 | 20 | Paranoid symptoms | 13.8 |
| 18 | Diurnal variation | 59.4 | 18 | Diurnal variation | 60.1 |
| | Worse in morning | 61.4 | | Worse in morning | 65.5 |
| | Worse in evening | 30.7 | | Worse in evening | 25.0 |
| | Worse in afternoon | 7.9 | | Worse in afternoon | 9.5 |

and in the females suicide (80%) and initial insomnia (78%), we find that the eight commonest symptoms are the same in males and females, although the order of frequency is slightly different. The least common symptoms are the same for both sexes: retardation (52% and 43% in males and females respectively), hypochondriasis (33% and 26%), and loss of insight (28% and 22%).

Retardation comes 15th in males (52%) and females (43%). Agitation comes 13th in males (68%) and 12th in females (68%). Thus agitation is only a little more frequent than retardation in males but one and a half times as frequent in females.

One way of comparing the difference in incidence of symptoms between the sexes is by means of the $\chi^2$ test. The difference is statistically significant in only two symptoms: general somatic i.e. fatigability and loss of energy (males 82%, females 94%, $P<0.001$) and loss of libido (males 60%, females 50%, $P=0.02$). The latter finding is open to question and is probably an artefact of the method of recording. The presence of this symptom can be assessed only if there is evidence of deterioration of libido in relation to the illness. Although libido can persist into old age, it declines steadily with increasing years, so that in older patients it becomes progressively more difficult to elicit as a *symptom*. It is particularly difficult in female patients, partly because sexuality in women is less of a drive and more of a response to stimulation, and partly because an ever-increasing proportion of older female patients is widowed. It is very difficult to obtain information about libido in a woman aged 60 years who has been widowed for 20 of them! In consequence, absence of this symptom signifies only too often mere absence of information.

Another way of comparing the symptoms in the two sexes is to compare their order. Spearman's rank correlation is 0.96, which indicates that although there are minor differences in the pattern of symptoms between the sexes, i.e. the rank order of frequencies, they are recognisably the same. It would therefore appear that these findings (concerning sexual differences) are of little or no interest, but I would draw the attention of clinicians to the importance of fatigability as an extremely common symptom in women. Indeed, it may dominate the clinical picture as presented by the patient.

### *Uncommon symptoms*

There are three symptoms found in depressive illness which are not included in the total score. The reason for this is that the preliminary trials of the rating scale indicated that they occurred in less than 5% of the patients. The exclusion of these symptoms would simplify the scale and make it easier to use, at the cost of affecting the scores of only one in 20 patients at the most. In the event, taking these symptoms as present, however trivial they may be, they are

TABLE II

*Frequency of symptoms present, at least mild*

| | *Males* | | | *Females* | |
|---|---|---|---|---|---|
| *Item no.* | *Symptom* | *%* | *Item no.* | *Symptom* | *%* |
| 7 | Loss of interest | 93.7 | 1 | Depressed mood | 96.9 |
| 1 | Depressed mood | 92.9 | 7 | Loss of interest | 89.6 |
| 10 | Anxiety psychic | 77.8 | 10 | Anxiety psychic | 86.5 |
| 4 | Insomnia initial | 68.6 | 13 | Somatic general | 63.8 |
| 3 | Suicide | 64.0 | 4 | Insomnia initial | 61.2 |
| 11 | Anxiety somatic | 59.8 | 11 | Anxiety somatic | 61.2 |
| 6 | Insomnia delayed | 58.2 | 3 | Suicide | 60.4 |
| 17 | Weight loss | 54.4 | 6 | Insomnia delayed | 55.4 |
| 13 | Somatic general | 46.0 | 17 | Weight loss | 51.2 |
| 14 | Libido | 44.4 | 5 | Insomnia middle | 43.8 |
| 5 | Insomnia middle | 43.9 | 2 | Guilt | 41.9 |
| 2 | Guilt | 41.8 | 14 | Libido | 36.2 |
| 12 | Somatic gastrointestinal | 38.1 | 12 | Somatic gastrointestinal | 35.4 |
| 8 | Retardation | 22.6 | 9 | Agitation | 20.4 |
| 9 | Agitation | 18.8 | 8 | Retardation | 17.7 |
| 15 | Hypochondriasis | 15.5 | 15 | Hypochondriasis | 16.9 |
| 16 | Loss of insight | 5.0 | 16 | Loss of insight | 6.2 |
| 20 | Paranoid symptoms | 8.8 | 21 | Obsessional symptoms | 11.6 |
| 19 | Depersonalisation | 5.6 | 19 | Depersonalisation | 10.8 |
| 21 | Obsessional symptoms | 5.2 | 20 | Paranoid symptoms | 3.0 |
| 18 | Diurnal variation | 45.7 | 18 | Diurnal variation | 47.6 |
| | Worse in morning[1] | 68.1 | | Worse in morning[1] | 69.6 |
| | Worse in evening[1] | 25.5 | | Worse in evening[1] | 22.8 |
| | Worse in afternoon[1] | 6.4 | | Worse in afternoon[1] | 7.6 |

[1] Percentages given for 98 males, 92 females.

found more frequently than was thought. Even the most infrequent, depersonalisation in men, occurs with a frequency of 11%. The differences between males and females are all statistically significant: depersonalisation, $P<0.001$; paranoid symptoms $P<0.004$; and obsessional symptoms, $P<0.03$.

### *Diurnal variation*

It is frequently stated that diurnal variation of symptoms is characteristic of depressive illness. Table I shows that this symptom is found in three-fifths of the patients and that its features are about the same for men and women.

## **Frequency of symptoms which when present are not less than mild**

### *Common symptoms*

The details can be seen in Table II. Obviously, symptoms at this level are somewhat less frequent. Depressed mood is trivial or absent in 3% of the women and 7% of the men, who are therefore suffering from a depressive illness without being depressed. If nothing else, this finding makes clear the distinction between symptom and syndrome. One symptom, 'loss of insight', among those included in the total score, occurs in only about 5% of patients. The low incidence is an indication that the general run of depressive patients seen in psychiatric practice contains only a few severely ill patients. This is confirmed by the findings that paranoid, hypochondriacal and guilty delusions are found in 3% or less.

When we examine the frequencies of the main 17 symptoms in the two sexes, we find they are much the same, the rank correlation (Spearman's rho) being 0.95. When the comparison is made across Tables I and II, the correspondence is again very close. The correlations of the rank orders are 0.90 for the men and 0.89 for the women. This indicates that the same pattern of symptoms is to be found in the mildest as in the more severe cases.

### *Uncommon symptoms*

Among these, paranoid symptoms are the most common in men and least so in women ($P<0.007$).

### *Diurnal variation*

This is about 15% less than in Table I. It is noteworthy that the type of variation remains much the same.

### *Level of severity*

The foregoing has been concerned with the frequency of symptoms, regardless of whether they are trivial or severe. Bearing in mind the difficulties raised by the differing incidence in the two sexes, we can also compare the mean level of symptoms. Females are significantly more depressed ($t = 3.63$, $P < 0.001$) and agitated ($t = 2.272$, $P < 0.01$) and have a higher level of psychic anxiety ($t = 3.63$, $P < 0.001$), somatic symptoms of anxiety ($t = 2.38$, $P < 0.02$), fatigability (general somatic) ($t = 3.30$, $P < 0.01$), but less loss of libido ($t = 2.05$, $P < 0.01$). Once again, the meaning of the last figure is doubtful. Finally, there is no overall difference in the level of severity of illness, as measured by the total score on the rating scale ($t = 1.37$, not significant).

### *Delusions*

There has been renewed interest in the presence of delusions in melancholics, as it would appear that such patients do not respond well to treatment with antidepressant drugs. The frequency with which such symptoms are to be found is therefore of particular interest. In this rating scale, delusions do not appear as a separate symptom. However, in the items guilt, hypochondriasis and paranoid symptoms, the highest score is reserved for the appearance of delusions, and for guilt hallucinations are also included. The theoretical approach behind this assumes that there is a continuity in the manifestations of these symptoms, and that delusions are not regarded as signifying a break in the continuity of the symptom. This would not necessarily be accepted by everybody, as the appearance of hallucinations and delusions are often regarded as indicating the break between 'psychotic' depression and other varieties.

Bearing all this in mind, the frequency of delusions can be assessed by the frequency with which the maximum score is given for these three items. As two raters will not always agree exactly, we can allow a little leeway and count the frequency of scores of eight or seven. Out of 239 male patients, the number who have such scores for guilt is eight, for hypochondriasis, six out of 239, and for paranoid symptoms none of 249; the corresponding figures for the female patients are four out of 260, seven out of 260 and one out of 236. The percentages are shown in Table III. The findings are that delusions are indeed rare in depressive illness.

TABLE III
*Frequency of delusions*

| *Item no.* | *Symptom* | *Males* % | *Females* % |
|---|---|---|---|
| 2 | Guilt | 3.3 | 1.5 |
| 15 | Hypochondriasis | 2.5 | 2.7 |
| 20 | Paranoid delusions | 0 | 0.4 |

## Discussion

There can be no doubt that the most important of these findings is the high frequency of the symptoms of anxiety, both psychic and somatic. Even if the cases were to be separated into 'endogenous' and 'neurotic', these symptoms are so common that they would have to be frequent even in the former group of depressives. This is in complete contradiction of the traditional descriptions.

If we consider only those cases where the symptoms are clearly present, then not all of them have depression of mood. In a sense, we have the paradox of depression without depression. This brings out clearly the difference between a disorder or syndrome and a symptom.

Although depressive illness is twice as common in women as in men, and this implies some fundamental difference in the disorder as between the sexes, the symptom frequency is very much the same between the sexes. Aside from the artefact concerning loss of libido in women, there is only one symptom for which the differences are statistically significant: loss of energy (somatic general). Not only is the symptom more common in women, but it is often so severe that it dominates the clinical picture. Perhaps this is what is signified by the old diagnosis of 'neurasthenia'.

The high frequency of anxiety may explain why, in general practice, it is still common to prescribe anxiolytic drugs for patients who are diagnosed as suffering from depressive illness. Most of the patients seen by the general practitioner are not severely ill, and we know that most depressive attacks do not last longer than four to five months in all and about two to three from the time the patient comes for treatment. The anxiolytic drugs do make some improvement in the patients' condition and enable them to carry on. Antidepressant drugs would be more appropriate and more effective in the long run but, unfortunately, they are extremely unpleasant to take because of their side-effects. Patients are only too well aware of the problem that 'the treatment is worse than the disease', and they have a simple solution to deal with it: they do not bother. Faced with 'non-compliance', the general practitioner gives a treatment which is only partially effective instead of a better one which will not be taken.

The results obtained in this investigation are not all that new, or even surprising. Other investigators have found similar results. The only work that is strictly comparable to this is by Kim (1979). He similarly found anxiety symptoms (both psychic and somatic) in 97% and 93% of patients. He also sometimes found agitation (66%) and retardation (65%)

in the same patient. It is possible to compare his figures with mine if the results from the men and women are added together giving the latter twice the weight of the former. The rank correlation between the British and Korean figures is 0.82, using the data from Table I, the more appropriate, and 0.68 for Table II. The close similarity between patients from two such different cultures is particularly interesting. It is another instance that demonstrates that humanity is one species and that even mental illnesses are much the same the world over.

Harrow *et al* (1966) have found that much anxiety was reported by depressives and it was prominent in all types. Again, the cases were much less ill than those on whom were based the classic description. Beigel & Murphy (1971) found that anxiety and psychotic symptoms did not differ between unipolar and bipolar illness.

Hopkinson (1963) examined the clinical features of 100 depressive patients aged over 50 years. He found that diurnal variation of symptoms was present in 60, guilt feelings in 43, retardation in 59 and hypochondriasis in 34. His figures are quite close to those of Table I, except for guilt feelings, which were much less frequent. In a later paper (Hopkinson, 1965) dealing with 43 depressives below 50 years of age, he found diurnal variation in 67%, retardation in 72% and difficulty in falling asleep in 91%. As he did not describe in detail how the assessments were made, it is not possible to say more than that his figures are not all that different from those given here.

Patients suffering from depressive illness had much more of somatic symptoms than normal subjects who were depressed (Stallone *et al*, 1973). The differences were highly significant statistically for anxiety (psychic and somatic) symptoms, agitation, anorexia and loss of weight. These results are obviously in agreement, so far as one can say, with the data in Tables I and II. Diurnal variation of mood was not reported by four out of ten bipolar depressives (Weissman *et al*, 1975).

## Conclusions

Assessments of the symptoms of depressive illness, based on the use of a rating scale, give results which are in general agreement with clinical judgements of a looser kind. They give the advantages of making comparisons easier and more precise, and permitting quantitative methods in analysis. They have demonstrated clearly that depressive patients seen in psychiatric practice differ in their symptoms from those found in the classic descriptions.

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*We regret to hear that Professor Hamilton has died since this paper was submitted.

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# Negative and Depressive Symptoms in Schizophrenia

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Ninety-five schizophrenic patients were assessed using the Present State Examination, the Brief Psychiatric Rating Scale and the Scale for the Assessment of Negative Symptoms. Negative and depressive symptoms were frequent, and significant relationships among negative symptom complexes and depressive syndromes were noted. Retardation, lack of energy, slowness, and other symptoms of depression were significantly associated with the negative symptoms of schizophrenia. Depressed affect *per se* did not have a significant correlation with negative symptoms.

In recent years there has been a reawakening of interest in Jackson's (1931) division of symptoms of neurological disorders into positive and negative symptoms and in subtypes of schizophrenia (Crow, 1980; Andreasen, 1982). Many investigators have sought to confirm this dichotomous approach to the subtyping of schizophrenia, and have demonstrated differences between positive and negative subtypes on clinical, psychometric and psychobiological parameters (Andreasen & Olsen, 1982; Lindenmayer *et al*, 1984; Opler *et al*, 1984; Kay *et al*, 1986*a*). Inception of various scales that reliably measure negative symptoms has given additional impetus to research efforts (Andreasen, 1981; Lewine *et al*, 1983).

The longitudinal course, prognostic importance, and response to neuroleptic medication of negative symptoms have been studied by Pogue-Geile & Harrow (1985), Goldberg (1985), Kay *et al* (1986*b*) and Kay & Lindenmayer (1987). Affective flattening, poverty of speech, anergia, and anhedonia, generally regarded as negative symptoms, were for a long time considered to be pathognomonic of schizophrenia. Some recent investigations however (Andreasen & Akiskal, 1983; Pogue-Geile & Harrow, 1984; Chaturvedi *et al*, 1985; Kulhara & Chadda, 1987) have shown that these occur quite frequently and in considerable severity in depressive disorders, and it has been remarked by Andreasen & Akiskal (1983) and Kulhara & Chadda (1987) that discrimination between depression and schizophrenia on the basis of negative symptoms may not be possible.

The presence of depression in schizophrenia has long been recognised, and has been given terms such as 'pharmacogenic depression' (Johnson, 1973; Carney & Sheffield, 1973), 'revealed depression' (Knights & Hirsch, 1981), 'post-psychotic depression' (McGlashan & Carpenter, 1976; Siris *et al*, 1981), and 'akinetic depression' (Van Putten & May 1978). Some authors have contended that depression in schizophrenic patients is non-specific in nature and integral to the course of the disorder (Shanfield *et al*, 1970; Planansky & Johnston, 1978; Donlon *et al*, 1976; Moller & Von Zerssen, 1982).

Similarities between negative symptoms and depressive symptoms, difficulties in differential diagnosis between schizophrenics with negative symptoms and schizophrenics with depressive symptoms, failure to control for the effects of neuroleptic medication in the assessment of negative symptoms, conceptual ambiguities, and lack of construct validity of negative symptoms have been very provocatively commented upon in some recent reviews on this subject, and caution has been advocated in interpreting research results pertaining to negative symptoms (Sommers, 1985; Zubin, 1985; Andreasen, 1985).

Despite the considerable research data on depression and negative symptoms in schizophrenia, there are few studies that specifically deal with their assessment in the same patient. We report the prevalence and relationship of negative and depressive symptoms in a cohort of schizophrenic subjects. Our investigation had a cross-sectional phenomenological design, and the negative and depressive symptoms in the patients were assessed independently by different investigators employing well-known assessment scales and an interview schedule.

## Method

Details of the setting of the study, patient selection, instruments of assessment, and methods of assessment of the present work have been described in detail elsewhere

(Kulhara *et al*, 1986*a*,*b*), and only a brief description is given here.

Consultant colleagues were requested to refer to the research team patients with a final clinical diagnosis of schizophrenia. These colleagues were not aware of the exact nature of the study. Patients thus referred were further evaluated by the authors. The mental status of the patients was assessed by PK using the ninth edition of the Present State Examination (PSE) (Wing *et al*, 1974). General psychopathology was rated on the 18-item version of the Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962) by AA and SKM. The Scale for the Assessment of negative Symptoms (SANS) (Andreasen, 1981) was administered by SKK and SJ. On the basis of PSE interviews, PK also rated patients on the Scale for the Assessment of Positive Symptoms (SAPS) (Andreasen, 1984).

Using the Syndrome Check List of the PSE (Wing *et al*, 1974), the frequencies of various syndromes related to depression were computed. Diagnosis according to Catego classes (Wing *et al*, 1974) was performed using the Catego programme at the Institute of Psychiatry, London (UK). Categorisation of patients into positive, negative, and mixed subtype was done according to the criteria of Andreasen & Olsen (1982).

$\chi^2$ tests and *t*-tests were used where appropriate. The data were also subjected to multiple-regression analyses.

## Results

A total of 112 patients were referred to the research team, and 95 of these were assessed on PSE, BPRS and SANS.

Catego analysis of the PSE schedules assigned 65 patients to Catego class S, 15 patients to class O and the remaining 15 to other Catego classes. The percentage agreement between clinical diagnosis of schizophrenia and Catego categorisation of schizophrenia was 84%. Patients were then categorised in positive (28), negative (24), and mixed (43) subtypes of schizophrenia, according to the criteria of Andreasen & Olsen (1982).

The inter-rater reliability of both SANS and BPRS was calculated by Pearson's product moment coefficient of correlation method. For various items of BPRS, it ranged from 0.44 to 0.94. For various items of SANS, it ranged from 0.59 to 0.96. All these *r* values are significant.

The prevalence of various negative symptoms is shown in Table I. The most frequently occurring symptoms were impersistence at work, followed by relationship with friends and peers, inability to enjoy recreational activities, impairment in ability to feel intimacy and closeness, social inattention, lack of grooming and hygiene, and unchanging facial expression. Negative symptoms that were infrequently seen included poverty of content of speech, thought block, increased latency of response, inappropriate affect, and lack of vocal inflection during conversation.

On the BPRS, somatic concern, anxiety statement, guilt feeling, tension behaviour, depressed mood, and retardation are generally regarded as depressive symptoms. The mean scores of these depressive symptoms among positive, negative and mixed schizophrenics were compared. On all except retardation the three subtypes did not show any significant differences. On retardation, the negative subtype had significantly higher mean scores (mean 2.79, s.d. 1.86) than the positive subtype (mean 0.89, s.d. 1.13; $t=4.64$ at d.f. 50, $P<0.01$) and the mixed subtype group (mean 1.26, s.d. 1.22; $t=4.13$, d.f. 65, $P<0.01$).

TABLE I

*Prevalence of negative symptoms in the patient sample (n = 95)*

| *SANS item* | *Severity of symptom* | | |
|---|---|---|---|
| | *Absent or questionable* | *Moderate* | *Marked* |
| 1. Impersistence at work | 16 | 23 | 56 |
| 2. Recreational interests | 27 | 34 | 34 |
| 3. Grooming and hygiene | 29 | 35 | 31 |
| 4. Social inattention | 36 | 27 | 32 |
| 5. Unchanging facial expression | 39 | 28 | 28 |
| 6. Intimacy and closeness | 39 | 22 | 34 |
| 7. Physical anergia | 39 | 24 | 32 |
| 8. Relationship with friends | 40 | 11 | 44 |
| 9. Inattention on testing | 48 | 33 | 14 |
| 10. Decreased spontaneous movements | 49 | 25 | 21 |
| 11. Paucity of gestures | 54 | 20 | 21 |
| 12. Affective non-responsivity | 57 | 22 | 16 |
| 13. Vocal inflections | 57 | 25 | 13 |
| 14. Poor eye contact | 58 | 21 | 16 |
| 15. Sexual interests | 59 | 11 | 25 |
| 16. Latency of response | 63 | 22 | 10 |
| 17. Poverty of speech | 65 | 13 | 17 |
| 18. Inappropriate affect | 73 | 11 | 11 |
| 19. Poverty content of speech | 90 | 4 | 1 |
| 20. Thought block | 90 | 3 | 2 |

In the PSE, 19 items are regarded as symptoms indicative of depression. These can be further grouped to yield four depressive syndromes: depressive delusions and hallucinations (DD), simple depression (SD), special features of depression (ED), and other symptoms of depression (OD). In addition, a syndrome of lack of energy (LE) has been regarded by Knights & Hirsch (1981) to indicate depression. Depressive hallucinations (item 61(2) of PSE), premenstrual exacerbation (item 39), and pathological guilt (item 33) were not present in any patients. Dulled perception (item 51), lost emotions (item 54), muteness (item 133), and delusions of guilt (item 88) were very infrequently seen. The commonest symptom was loss of appetite, which was present in 32 patients, followed by depressed mood (31 patients), loss of libido (28 patients), hopelessness (18 patients), suicidal ideas (18 patients), and ideas of self-depreciation (13 patients). The distribution of these

TABLE II
*Correlations among negative symptom complexes and depressive syndromes*

| *Negative symptom complex* | *BPRS items of depression* | | | | | | *PSE syndromes of depression* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Somatic concern* | *Anxiety* | *Quilt* | *Tension* | *Depressed mood* | *Retardation* | *DD* | *SD* | *ED* | *OD* | *SL* | *LE* |
| Affective flattening | 0.06 | −0.00 | −0.05 | −0.20* | −0.13 | 0.0.54* | 0.09 | 0.15 | 0.20* | 0.31* | 0.59* | 0.51* |
| Avolition/apathy | 0.08 | −0.14 | −0.29* | −0.18 | −0.08 | 0.29* | −0.11 | 0.00 | 0.10 | 0.11 | 0.41* | 0.26* |
| Anhedonia/ asociality | 0.14 | −0.10 | −0.33* | −0.18 | 0.10 | 0.34* | −0.01 | −0.07 | 0.06 | 0.06 | 0.40* | 0.37* |
| Alogia | 0.10 | −0.06 | −0.24* | −0.16 | −0.11 | 0.47* | −0.12 | 0.01 | 0.04 | 0.13 | 0.52* | 0.42* |
| Attentional impairment | 0.07 | 0.2 | −0.10 | −0.17 | −0.08 | 0.28* | −0.05 | −0.13 | −0.02 | 0.05 | 0.49* | 0.31* |

DD, depressive delusions; SD, simple depression; ED, special features of depression; OD, other features of depression; SL, slowness; LE, lack of energy.
*$P<0.05$

depressive symptoms in the positive, negative, and the mixed subtypes did not show any significant variability.

The frequencies of the various depressive syndromes of the PSE in positive, negative and mixed subtypes were computed: DD, SD, ED, and OD were evenly distributed in the three subtypes, and no significant differences were noted. The negative subtype had significantly more cases with the syndrome of slowness (19 out of 24 patients) than the positive subtype (5 out of 28 patients) and the mixed subtype (17 out of 43 patients) ($\chi^2=20.2$, d.f. 2, $P<0.005$). Also LE was significantly more frequent in the negative subtype (18 out of 24 patients) than the positive subtype (7 out of 28 patients) and the mixed subtype (25 out of 43 patients) ($\chi^2=13.2$, d.f. 2, $P<0.005$).

The correlation among various depressive symptoms of the BPRS and depressive syndromes of the PSE with a global rating of negative symptom complexes of the SANS (Andreasen, 1981) are shown in Table II. Retardation, slowness, and LE have significant positive correlations with all five negative symptom complexes. Syndromes of ED and OD also have significant positive correlation with affective flattening. Apart from these, all other syndromes of depression have poor to negative correlation with negative symptom complexes. Depressive symptoms such as somatic concern, anxiety statements, guilt feelings, tension behaviour and depressed mood have poor to significant negative correlations with negative symptom complexes.

To assess the proportion of variation in negative symptom complexes of the SANS that is predictable from the depressive symptoms and depressive syndromes, standard multiple-regression analyses were carried out, with negative symptom complexes treated as dependent variables. *F* ratios for linear equations were found to be significant. All the depressive symptoms/syndromes taken together explained 54% of the variation of affective flattening, 43% for alogia and anhedonia/asociality, 32% for attentional impairment and 31% for avolition/apathy. Multiple correlation values ($R$), $R^2$, and $F$ ratios are shown in Table III.

## Discussion

Our study demonstrates that on concurrent assessment by independent assessors, a large majority of patients have both negative and depressive symptoms. Of 95 patients, only 11 had no negative symptoms, and only 12 had no depressive symptoms as assessed on the BPRS or PSE.

Because of methodological differences in the assessment of depressive symptoms, our results are not comparable with many published works. However, comparison with the work of Knights & Hirsch (1981), because of their use of PSE, is possible. Except for DD, all other syndromes of depression occur less frequently in our patients. Depressed mood was seen in about 32% of our patients, and this finding is similar to the one reported by Siris *et al* (1981).

A striking feature of the present investigation is that although retardation, slowness and lack of energy are significantly more marked in schizophrenics with negative symptoms, more characteristic symptoms of depression, such as depressed mood, somatic concern, guilt, tension, hopelessness, suicidal ideas, self-depreciation, and early wakening, either occur in equal proportions in these subtypes or are seen very infrequently. This finding on clinical basis alone suggests that retardation in schizophrenia,

TABLE III
*Multiple-regression analyses of negative and depressive symptoms*[1]

| *Negative* | R | $R^2$ | F *ratios*[2] |
|---|---|---|---|
| Affective flattening | 0.74 | 0.54 | 8.35 |
| Avolition/apathy | 0.56 | 0.31 | 3.16 |
| Anhedonia asociality | 0.66 | 0.43 | 5.31 |
| Alogia | 0.66 | 0.43 | 5.37 |
| Attentional impairment | 0.57 | 0.32 | 3.31 |

1. For regression analyses, the negative symptoms were treated as dependent variables and depressive symptoms were treated as independent variables.
2. For all *F* ratios, $P<0.001$, d.f. 12.82.

particularly with negative symptoms, does not arise from depressed affect. This is supported by the significant positive correlations between negative symptom complexes and retardation, slowness and lack of energy, and the observation that other characteristic symptoms of depression have poor to negative correlation with negative symptoms.

By subjecting our data to multiple regression analyses, we have sought to determine the strength of the relationship between negative and depressive symptoms. Here again, it is observed that but for such non-specific depressive features as slowness, retardation and lack of energy, other symptoms of depression are not associated with negative symptom scores in any meaningful way. This also indicates that although negative symptoms and depressive symptoms may be similar in appearance and observable behaviour, they probably originate from different underlying processes. In this respect we are in agreement with Pogue-Geile & Harrow (1984).

Our findings are compromised to an extent because of some limitations to the study. Firstly, we have not controlled for extrapyramidal side-effects of neuroleptic medication. Secondly, we have not employed a standard rating scale for the assessment of depression, and have relied on PSE and BPRS. We feel that this is not a serious shortcoming as both PSE and BPRS are well-established instruments in the assessment of manifest psychopathology. Thirdly, we have not subjected our data to the type of analyses that Sommers (1985) and Zubin (1985) have advocated, because of the limited nature of our data and lack of facilities to carry out such sophisticated analyses.

The strengths of our investigation are its cross-sectional design, with concurrent assessments of negative and depressive symptoms by independent observers using different instruments. Such an approach tends to minimise bias and allows for more accurate assessments of single subject. In this respect we feel that we have partly met the suggestions of Zubin (1985) and Sommers (1985).

## Conclusion

The present work indicates that the more characteristic symptoms of depression do not have much influence on the prevalence of negative symptoms in schizophrenia. A positive relationship between negative symptoms and many depressive symptoms is not established, suggesting that these two phenomena in schizophrenia may be arising from different processes. The need for more work in this interesting and important area of psychopathology is self-evident.

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# The Initial Onset of Schizophrenia and Family Expressed Emotion
## Some Methodological Considerations

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The relationships between duration of schizophrenic illness before first hospital admission, expressed emotion in key relatives, and illness course have yielded conflicting reports. This study examined the issue from a methodological perspective in a sample of first-episode schizophrenic patients. A 'best estimate' of illness onset, based on a compilation of all sources, was compared with an estimate based on parental report. Parental estimates suggested that the children of high-EE parents had been ill for significantly longer, but this difference was not confirmed by the best estimate. In most cases, the ill children of high-EE parents were living at home before hospital admission and their parents' estimates of duration were quite accurate. In the few cases in which the child was living away from home, high-EE parents strikingly overestimated duration. Children of low-EE families were more likely to be living away from home, but this factor did not explain the consistent underestimates of duration made by their parents. Although duration of illness did not relate to EE, successful engagement in out-patient before in-patient treatment was more common among children from low-EE families.

In a recent study of first-episode schizophrenic patients, MacMillan *et al* (1986) reported that the time between the first onset of disturbed behaviour and the first hospital admission, a period they termed "the duration of untreated illness", tended to be longer in families described as high in expressed emotion (EE). A similar relationship was noted by Parker & Johnson (1987). MacMillan *et al* (1986) found that the EE status of the relative with whom the patient had the most contact and duration of illness were both significant predictors of relapse risk when considered separately, but when these two factors were combined in a multivariate analysis, only duration continued to predict the likelihood of relapse. One implication of their report is that the well-documented association between EE and relapse risk may be a spurious artefact arising through the actual causal agent, untreated illness.

In the USA, Nuechterlein *et al* (1986*b*) examined a similar question in a sample of young patients with schizophrenia of recent onset. The EE status of the patients' families was assessed using the standard Camberwell Family Interview (Vaughn & Leff, 1976), and the initial onset of illness was carefully documented. In that study, family EE status was highly predictive of relapse, but no relationship between family EE status and the duration of illness was found.

One possible way to reconcile these discrepant results is to consider that different methods were used for dating the initial onset of a schizophrenic disorder. Dating of schizophrenic onset is not an easy task and there are no conventionally accepted operational criteria with which to define illness onset. A reasonable case could probably be made for a range of possibilities, from the first signs of *any* significant behavioural disturbance to the onset of frank positive symptoms to the appearance of a full schizophrenic syndrome.

The point is that the criteria chosen can radically alter the estimated date of initial onset, thus affecting its apparent correlation with other factors such as EE. Without a clear operational definition of illness onset, its determination can be quite subjective. Moreover, if the historical data used to date initial onset are obtained from the very relatives whose attitudes towards the patient provide the basis for the EE determination, the onset estimates might well be further biased.

This study addresses these methodological concerns by reanalysing the onset data from the Nuechterlein *et al* (1986*b*) study, using only patients who were experiencing their first episode of schizophrenia at the time of entry to the study to parallel the MacMillan *et al* (1986) study. It compares estimates of the duration of schizophrenic illness before the first hospital admission based on the reports of relatives rated for EE with a '*best estimate*' derived from multiple sources. It also explores whether those estimates relate to the EE status of the relatives, and whether the relatives' EE or their perceptions of illness duration relate to the degree of direct exposure to the patient before the initial hospital admission or to the patient's premorbid adjustment.

The notion that high EE might in some cases be a *reaction* to exposure to the patient's illness appeared in an early discussion of EE by Brown *et al* (1962). They wrote that:

> "in about one-third of the interviews it seemed that the past or current behavior of the patient was a sufficient cause of the 'high emotional overinvolvement'. . . . In roughly another third the 'high emotional overinvolvement' was clearly due to the unusual behavior of the relative, and could be independent of the severity of the illness of the patient. . . . The remaining families could be included in neither group . . . it is possible that an interaction between the behavior of the patient and that of the relative was responsible for the 'high emotion'."

Research on the association between patient characteristics and family attitudes has produced only scattered significant associations. Brown *et al* (1972) noted an association between degree of behavioural disturbance and work impairment and relatives' EE. Miklowitz *et al* (1983) found that family EE was not associated with premorbid functioning in a chronic schizophrenic sample, but when they divided global EE into its two components, criticism and emotional overinvolvement, an association was found between emotional overinvolvement and poor premorbid adjustment. That finding, while intriguing, probably is less relevant for younger, first-episode patients, since emotional overinvolvement has been found to be very rare in these families (MacMillan *et al*, 1986; Nuechterlein *et al*, 1986*b*).

## Method

### Subjects

The 33 schizophrenic patients and their families studied here are participants in a larger ongoing longitudinal study of the early phase of schizophrenic disorders (Nuechterlein *et al*, 1986*a*, *b*). The patients were recruited in the Los Angeles metropolitan region during an index hospital stay at one of four public hospitals (UCLA Neuropsychiatric Institute and Hospital, Camarillo State Hospital, Harbor/UCLA Medical Center, Olive View Medical Center). To enter the project, each was required to have (a) a diagnosis of schizophrenia or schizoaffective disorder, mainly schizophrenic, by Research Diagnostic Criteria (Spitzer *et al*, 1978), based on an expanded version of the present state examination (PSE) (Wing *et al*, 1974) administered to the patient, and consideration of any additional data gathered from relatives; (b) a recent onset of major psychosis lasting at least two weeks with a first psychotic episode starting not longer than two years before project contact; (c) an age between 16 and 45 years; and (d) Anglo-American, acculturated Asian, or acculturated Hispanic ethnicity. Subjects with any of the following were excluded: (a) evidence of an organic central nervous system disorder (e.g. epilepsy, traumatic brain injury, infectious or toxic cerebrovascular disease); (b) significant and habitual drug or alcohol abuse in the six months preceding the current episode, or past drug or alcohol abuse that clouded the diagnostic picture; or (c) mental retardation (premorbid IQ<70).

The present study includes all schizophrenic patients who were recruited for the ongoing project during their *first* psychotic episode. The typical patient was young (mean age = 22.7; s.d. = 3.6; range 18–32 years), white (87.5% Anglo-American, 9.4% Hispanic, 3.1% Asian), and male (88%), with secondary education (mean = 12.2 years' education; s.d. = 2.0; range 9–16). The patients included 24 with schizophrenia and nine with schizoaffective disorder, mainly schizophrenic.

### Assessment of EE

Family members who had significant contact with the patient were administered the Camberwell Family Interview (CFI; Vaughn & Leff, 1976) within one month of the patient's hospital admission by project staff. The CFI is a standardised, semi-structured interview that focuses on the onset and development of the patient's present illness episode and its impact on the family environment. The interview is tape recorded for later scoring. Ratings of critical comments, hostility, and emotional overinvolvement were made by trained raters who had achieved minimum inter-rater reliability coefficients of 0.80. The family environment was rated as high in EE if any family member made six or more critical comments, was rated as high (4) or marked (5) on emotional overinvolvement, and/or was rated as showing hostility. In a family in which none of the relatives met these criteria, EE was rated as low. Using these criteria, EE was classified as high in 19 of the 33 families.

### Assessment of duration of illness

#### *Family perception*

Family members' perceptions of illness duration before admission to hospital and the duration and development of specific symptoms were determined from the CFI interviews, in which these points were specifically queried. The CFI interviews were coded by two trained raters using a detailed coding form. Raters noted each symptom and its duration as reported by a relative during the interview. Duration was defined by the first occasion that the relative had directly observed the symptom. Prodromal and psychotic symptoms for schizophrenic disorder in DSM–III (American Psychiatric Association, 1980) were considered. A reliability check on coding of a subsample of 12 families indicated perfect agreement on coding.

#### *'Best estimate'*

Duration of illness before hospital admission was also determined by project staff working independently from the above raters by making a best clinical judgement based on all sources of information. Again, both prodromal and psychotic symptoms were included as evidence of illness. The information from family members obtained during the CFI was one source of raw data for this judgement. In addition, information about the earliest prodromal and psychotic symptoms was elicited from the patient by an independent, specially trained interviewer who completed the expanded version of the PSE as well as a psychiatric history form. The PSE interviewer summarised the timing of the symptom course on a time-line form. For patients who were felt to be poor historians during their in-patient periods, the out-patient case manager questioned the patient further. Information on the psychiatric history was also sought from additional family members and close friends of the patient in instances in which these individuals had good opportunities to observe the patient during the period of initial onset of illness. Finally, hospital records were consulted to determine whether other clinicians had elicited additional information.

In making the 'best estimate' of illness duration, project staff considered the amount of detail provided by each source, the extent of direct observation on which the information was based, and the degree to which the source appeared to be reliable. In cases in which different interviewers elicited different onset information, these interviewers discussed and attempted to resolve the differences to make the 'best estimate' of illness duration. Such weighted combination of information from different sources has been advocated by Brockington & Meltzer (1982) to document current episodes of psychiatric illness with greater validity, given the fact that any single source is likely to suffer from limitations in perspective and observation opportunities. The procedure described here extends this procedure to judgements about onset of initial illness.

As an example of the best-estimate procedure, consider a case where the relatives to whom the CFIs were administered report that they noticed the initial symptoms of the patient only about one month before hospital admission. However, the patient reports that he first felt that coworkers were conspiring to get him fired from his job in the month of his last birthday, five months before admission. A close friend of the patient also reports that he began complaining to him about conspiring coworkers about five months before admission to hospital. In this case, considering the patient's report of onset near a specific datable event (his birthday) and the agreement of his report with that of a friend, five months would be used as the best estimate of illness duration.

## Results

### Duration of Illness

Differences between families of high and low EE were found for the parental reports of illness duration, but were not significant for the best assessment. Table I summarises data from a $2 \times 2$ factorial repeated-measures analysis of variance computed on ranked duration measures (ranks were used because of an extreme outlier). The interaction effect was highly significant ($F(1,31)=13.2$, $P<0.001$). Simple effects analysis indicated a highly significant difference for parental report ($F(1,31)=12.6$, $P<0.0013$) and a non-significant difference for the best assessment ($F<1$). Parents in high-EE families reported first observing symptoms 9.5 months before the patient was first admitted to hospital, while parents in low-EE families reported a period just over half as long.

Table II highlights that difference. In 95% of patients from high-EE families, more than three months elapsed between the parents' first perception of symptoms and admission to hospital, as compared with only 29% of those from low-EE families. These results replicate those of

TABLE I

*Mean duration of illness and level of family expressed emotion (EE) in first-admission schizophrenic patients*

| | *High EE* (n = *19*) | *Low EE* (n = *14*) |
|---|---|---|
| Best estimate of duration: months | 8.4 (5.2) | 11.6 (10.9) |
| Parent report from CFI only: months | 9.5 (6.1) | 5.4 (9.4) |

Table entries are means (s.d.).

TABLE II

*Time between first symptom perceived by parents and hospital admission in families of high and low expressed emotion (EE)*

| *Time* | *Number of families* | |
|---|---|---|
| | *High EE* | *Low EE* |
| <3 months | 1 | 10 |
| >3 months | 18 | 4 |

$\chi^2=15.880$; d.f. = 1; $P<0.0001$.

TABLE III

*Duration of illness as a function of place of residence before first hospital admission, source, and level of family expressed emotion (EE)*

| *Living status* | n | *High EE* | | n | *Low EE* | |
|---|---|---|---|---|---|---|
| | | *Best estimate: months* | *Parental estimate: months* | | *Best estimate: months* | *Parental estimate: months* |
| Away | 4 | 7.2 (4.3) | 14.2 (11.3) | 8 | 14.5 (14.4) | 7.8 (13.8) |
| At home | 15 | 8.7 (5.5) | 8.2 (3.4) | 6 | 9.5 (7.9) | 3.6 (4.2) |

Table entries are means (s.d.).

MacMillan *et al* (1986) and Parker & Johnson (1987) for parental reports of illness duration, but not for the best assessment based on all sources.

Examining the discrepancies between the methods of establishing illness duration indicates that the major difference occurs for the low-EE group. The low-EE CFI informants reported a far shorter duration of illness than was indicated by the best-estimate procedure ($t(13)=3.12$, $P<0.01$), while the difference between parental and best estimates for the high-EE group was not significant ($t(18)=-0.85$, $P>0.40$).

What accounts for the wide discrepancy in dating the onset of such a significant behavioural deviation? One possibility is that low-EE relatives may have less opportunity to observe the changes in behaviour associated with the development of psychosis in an offspring. This could occur if offspring in low-EE families were less likely to be living at home before the onset of the psychotic process.

### Expressed emotion and living circumstances before hospital admission

Following this hypothesis, we determined the place of residence of the patient at or immediately before the initial hospital stay. As shown in Table III, there were indeed marked differences in the offspring's living situation consistent with the hypothesis that high-EE relatives had a greater opportunity than low-EE relatives to witness the emergence of psychotic symptoms. Of 19 patients from high-EE families, 15 were living at home compared with only 6 of 14 patients from low-EE families ($\chi^2=4.54$, d.f. $=1$, $P<0.03$). Interestingly, children from high-EE families were just as likely to move away at some point as those from low-EE families ($\chi^2=0.31$, NS). However, they were significantly more likely to return home before their hospital stay ($\chi^2=6.42$, d.f. $=1$, $P<0.01$) (5 of the 15 compared with none of those in low-EE families).

Could this explain the finding that high-EE parents appeared to be more accurate in their perception of illness duration? Did the tendency of low-EE parents to underestimate duration result from lack of contact with their child during the prodromal period? To explore this, we examined estimates of duration separately within high-EE and low-EE groups as a function of whether the child was at home or not. The results are summarised in Table III. It is important to stress the limitations of this measure as an index of *exposure* to the ill child. Obviously, the fact that a child is living at home does not *guarantee* more daily contact, but it seems likely that living in the same home would in general result in greater daily contact.

As shown in Table III, low-EE parents tended to *underestimate* illness duration by about six months, whether or not the child was living at home ($F=9.01$, d.f. $=1,12$, $P<0.011$). The results for high-EE parents were more complex. This analysis must be viewed cautiously because the number of high-EE families in which the ill child was living away was very small ($n=4$), but we think it should be reported because the interaction was significant ($F=7.34$, d.f. $=1,17$, $P<0.015$). Striking *overestimates* of duration were observed in those few cases in which the child was no longer living at home, in contrast to the generally accurate estimates of illness duration made by most high-EE parents.

### Place of residence, EE, and premorbid adjustment

The fact that patients from high-EE families are more likely to be living at their parents' home before hospital admission raises the issue of whether they show a broader pattern of poor premorbid psychosocial adjustment. This is a critical issue, because poor premorbid adjustment is a known predictor of the short-term course of schizophrenia. If a measure of poor premorbid adjustment were correlated with EE status, that would imply that EE's prognostic value might result from that association.

We therefore examined the patients' premorbid adjustment scores on the UCLA social attainment scale (Goldstein, 1978). This scale reflects the quality and quantity of same-sex and opposite-sex relationships during the adolescent period. Scores on this scale were found to have no significant correlation with family EE status ($r=0.18$; $P>0.30$). Similarly, high-EE relatives did not report more premorbid difficulties for the patient in such areas as drug experimentation (5 of 19 high-EE v. 8 of 14 low-EE families), or work or school performance difficulties (8 of 19 high-EE v. 9 of 14 in low-EE families). Neither of these contrasts was statistically significant, although in both cases reports of difficulties tended to be *more* common in low-EE families. This latter finding argues against a generalised tendency to complain of problems in high-EE families as an explanation of the earlier reported onset of symptoms in high-EE families.

### Duration of illness v. duration of untreated illness

MacMillan *et al* (1986) emphasised that patients from high-EE families had been untreated for a longer period than was the case for patients from low-EE families. We took the opportunity to re-examine this issue in our sample. In the Nuechterlein *et al* (1986*a*) study, records are collected about any out-patient treatment received before the initial hospital stay. Generally, this out-patient treatment was not sought for schizophrenia, but for other types of apparently

TABLE IV

*Family expressed emotion (EE) and out-patient treatment before first hospital admission*

| | *Number of families*<br>*High EE* (n = *19)* | <br>*Low EE* (n = *13)*[1] |
|---|---|---|
| 1. No prior treatment | 12 | 6 |
| 2. Prior treatment, terminated unilaterally | 5 | 1 |
| 3. Prior treatment, engaged | 2 | 6 |
| 4. Any prior treatment (2+3) | 7 | 7 |

1. Data not available for one low-EE patient.

less severe problems. Table IV presents the number of patients from high-EE and low-EE homes who had received out-patient treatment before their first admission for schizophrenia.

Patients from high-EE families were less likely to have had out-patient treatment before hospital admission (37% of high-EE v. 54% of low-EE families), but this difference was not significant. Patients from high-EE families were significantly more likely to have terminated prior out-patient treatment unilaterally than those from low-EE families ($\chi^2=4.67$, d.f. = 1, $P<0.031$). For this reason, significantly fewer patients from high-EE families (11%) than from low-EE homes (46%) had been successfully engaged in treatment before hospital admission ($\chi^2=5.22$, d.f. = 1, $P<0.05$).

## Discussion

Our data confirm MacMillan *et al*'s (1986) report that high-EE parents perceive their schizophrenic offspring to have been ill for significantly longer before hospital admission than low-EE parents. However, we observed no difference in best estimates of illness duration based on all information sources. It was the estimates of duration made by low-EE parents that diverged sharply from our best estimates, while those made by high-EE parents appeared, on average, to be quite accurate. In this light, statistical control of a measure of illness duration based on parental reports, as was done by MacMillan *et al* (1986) in an attempt to clarify the links between EE and outcome, would appear quite inappropriate (see also Mintz *et al*, 1987).

Children from high-EE families were often living at home at the time of initial hospital admission, while low-EE parents less often had this daily opportunity to observe their child's illness. Therefore, parents from low-EE families may have been less likely to witness the emerging signs of psychosis. However, this difference did not explain the finding of a large discrepancy between parental and best assessments of illness duration in low-EE families. Low-EE parents underestimated illness duration whether the patient was living at home or not, consistent with their generally benign attributional style in viewing their child's disorder. High-EE parents tended to be quite accurate about duration, but there was a suggestion that high-EE parents whose children were not living at home tended to overestimate illness duration. This intriguing finding demands replication in a large sample, however, because most children of high-EE families were living at home at the time of hospital admission.

Confronted with a discrepancy between our best estimate of illness duration and a parental report, we believe the former to be more valid. Our best estimate of illness duration certainly *should* be the more accurate because it considers all sources of information and takes the quality of the historical reports from each source into account. In any event, our findings emphasise that the manner in which duration is assessed does make a critical difference. Duration of illness before hospital admission for schizophrenia may appear to be a much more objective variable than parents' EE. This study makes it clear that an estimate of duration based on parental report is not necessarily objective. These results suggest that researchers must carefully evaluate the way such data are ascertained.

Our best assessments suggest that actual differences in illness duration before hospital admission are *not* the basis for EE's prognostic value; the best estimates available suggested that the average duration was slightly, though not significantly, *longer* among patients from low-EE families. Furthermore, as reported by Nuechterlein *et al* (1986*b*), relapsing patients in this project do not differ from non-relapsing patients in best estimate of illness duration, but are more likely to have high-EE relatives.

While duration *per se* was not correlated with EE status of the relatives, engagement in some form of sustained out-patient treatment before hospital admission was. While this finding is consistent with MacMillan *et al*'s (1986) report that high EE was associated with a longer duration of untreated illness in their first-break sample, the relationships between early treatment, EE and clinical course are probably complex. Failure to seek or engage in treatment may well reflect something about the patient's personality, the illness itself, the family environment, treatment alternatives or interactions among these factors.

The findings that the high EE of relatives is associated with higher likelihood that the patient resides in the home at the time of hospital admission and has unilaterally terminated out-patient treatment raise very interesting issues. It seems possible that in some cases direct exposure to a progressively more symptomatic patient, particularly one who is not successfully engaged in treatment, might stimulate high levels of criticism in close relatives. On the other hand, any pre-existing high levels of criticism by relatives might reduce the child's sense of mastery and lessen the chances of a successful move away from home and of engaging in appropriate treatment when personal problems arise.

Thus, these correlational findings suggest important directions for future research, but they cannot establish causes. It would obviously be of considerable value to determine *why* the schizophrenic children of high-EE parents are more likely to be living at home when symptomatic, and *why* they are less likely to engage in treatment than their low-EE counterparts. If such behaviour is due to subtle premorbid differences that are not yet understood, that would have considerable importance in understanding the origins of parental affective attitudes assessed after referral to hospital for schizophrenia. These data do not relate directly to the prognostic implications of EE, the mechanisms by which family interventions are effective, or the direction of effects among these inter-related phenomena, but they certainly do warn against simplistic statistical modelling of these complex relationships.

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# 'Bhanamati' Sorcery and Psychopathology in South India
## A Clinical Study

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We describe the patterns of illness attributed to sorcery among 209 patients who attended a special clinic in south India. Somatisation and conversion disorders accounted for the majority of patients, although several other psychiatric and medical disorders were also seen. Aspects of treatment of such patients in the sociocultural context are discussed.

The term 'witchcraft' has commonly referred to the believed use of supernatural means for evil ends. While in popular usage it is synonymous with sorcery, anthropologists traditionally distinguish witchcraft from sorcery: sorcery refers to the deliberate alteration of events through magic and rituals for good or evil purposes (Marwick, 1970). While witchcraft is said to represent inherent mysterious powers in some unusual individuals who effect harm through an obscure compulsion, sorcerers are guided by simple ill will. Belief in sorcery is found in most parts of the world: among African tribes in North America (Tinling, 1967), in the West Indies (Wintrob, 1973), and among the Yoruba (Lambo, 1955).

Sorcery is invoked as a causal explanation for physical and mental illnesses in several cultures. Fear syndromes attributed to sorcery have been reported following unexpected deaths among Australian aborigines (Reid & Munuggur, 1977). Sorcery syndromes characterised by anxiety and fears of persecution have also been described in Australian aborigines (Reiser & Eastwell, 1981) and in Burma (Spiro, 1969). Sorcery attributions have been viewed as a means of resolving political (Boyer & Nisselbaum, 1974) and social struggles (Spanos, 1978). Most studies have so far involved anecdotal case reports, and few have examined the patterns of illnesses attributed to sorcery in large series.

Descriptions of sorcery in India date back to the Vedas (*circa* 1500 BC). A kind of sorcery called Bhanamati has been practised for some centuries in south India. Sorcerers in this area belong to both Hindu and Islamic religions, and the craft of sorcery is handed down from father to son. The sorcerers are also known for their healing powers, using exorcism and counselling to help their clients, often in liaison with medical practitioners (Carstairs & Kapur, 1976).

Psychopathology related to sorcery in India has received little attention in the literature. In 1980, several simultaneous outbreaks of illnesses attributed to sorcery occurred in some districts of north Karnataka: the matter was investigated by a government committee, which included the authors of this paper. Detailed inquiry suggested that the outbreaks conformed to descriptions of epidemic hysteria. Several social and political factors (e.g. recent famines, increasing unemployment, inadequate health services, conflicts between rival religious communities) were possibly related and are detailed elsewhere (Narasimhaiah, 1982). In this paper we describe the patterns of illnesses attributed to sorcery in one of the villages where an outbreak of epidemic hysteria occurred.

### Methods

A series of patients who, in response to a newspaper advertisement, attended a special clinic for those afflicted with 'Bhanamati' at Aurad, a village in Bidar district, were interviewed. In order to recruit them, we obtained help from some community leaders, and locally prominent healers. Only those illnesses attributed by the patients (or in the case of children, by parents) to sorcery were studied. A detailed medical history and examination including an unstructured psychiatric interview were carried out by a general practitioner. When a psychiatric condition was considered likely, the patient was examined, in addition, independently by two psychiatrists using an unstructured interview. The diagnosis was made by consensus based on DSM-III (American Psychiatric Association, 1980). In order to assess comorbidity, the physical illnesses were also coded in these patients on axis 3 of DSM-III.

### Results

A total of 209 patients with sorcery-attributed illness (68 males and 141 females) were evaluated for psychopathology. The mean age was 24 (s.d. 4.8) years. Except for four Muslims and two Christians, all patients were Hindus. A summary of the diagnoses is presented in Table I. The patients who were found to have no psychiatric illnesses but to have physical illnesses included five with

TABLE I
*Diagnostic categories of patients with symptoms attributed to 'Bhanamati'*

| *Diagnosis* | *Patients* |
|---|---|
| Conversion disorders | 108 |
| Somatisation disorder | 30 |
| Anxiety disorder | 29 |
| Dysthymic disorder | 9 |
| Schizophrenia | 5 |
| Major depressive disorder | 2 |
| Bipolar disorder | 1 |
| Mental retardation | 1 |
| Epilepsy | 2 |
| Other physical illnesses | 22 |
| Total | 209 |

severe anaemia, three with chronic bronchitis, three with diabetes, four with intractable epilepsy, and one each with osteomyelitis, septic arthritis, pulmonary tuberculosis, stroke, neural leprosy, cerebral palsy and nutritional polyneuropathy. Those primarily diagnosed with psychiatric disorders who had coexisting physical illnesses were as follows: conversion disorder 40%; somatisation disorder 73%; anxiety disorder 37%; dysthymic disorder 22%; and schizophrenia 40%.

The following case histories illustrate some of the commonly observed patterns of psychiatric disturbances observed in relation to sorcery attribution.

### Case 1

An 18-year-old single Muslim girl presented with attacks of unconsciousness, during which she would sometimes scream and utter incomprehensible words. The attacks usually lasted about ½–2 h, were associated with bizarre limb movements, and occurred whenever the topic of her marriage came up in conversation. The attacks had started following her engagement, three years earlier, to a distant cousin whom she did not want to marry. The attacks would clearly increase whenever this cousin visited their house. The relationship between the patient's and the cousin's family had gradually deteriorated. The latter had been insisting on early marriage as well as a large sum of money as dowry. The patient's family could not afford this and had grown reluctant to marry their daughter off. The family members and the patient had attributed her symptoms to sorcery performed by the cousin's father. Shortly before the patient was interviewed, the cousin had married another girl. Interestingly, the attacks had become less frequent following this. We chose to simply reassure the patient and her family about the absence of serious illness and arrange follow-up with the physician.

### Case 2

A 13-year-old Hindu girl presented with attacks of altered sensorium and vague fear of six months' duration. During the attacks, she would throw off her bangles and toe rings (symbols of marriage in this culture) and frequently remove her clothes. The symptoms had started following her marriage to a rich, widowed man much older than her. She had attained menarche only a month before marriage, was very naive in her understanding of sexuality and was reported to have been very much upset and afraid of marriage. The patient revealed in a subsequent interview that she was very frightened of her husband since marriage. The latter admitted having been rather tactless during the first few nights after marriage. The parents of the girl were convinced that her 'attacks' were due to Bhanamati sorcery by their neighbours. They believed that the neighbours were envious of their daughter marrying a much richer and locally prominent man. They were reluctant to accept the psychiatrist's explanation that this could be a reaction to the stress of her marriage. However, the couple agreed to see the general practitioner regularly to obtain help with their marital and sexual problems.

### Case 3

A 70-year-old widow had been having episodes of abnormal behaviour lasting 3–6 months, once every 3–4 years since 1960. During these episodes, she would talk and laugh to herself and would hear voices; she also believed that she might be killed by black magic performed by her brother-in-law. Her husband had died without having made a will, and she had been the natural heir of a large property. However, there had been an unresolved suit by the brother-in-law about his share of the land. She had been diagnosed as having paraphrenia, and treatment with neuroleptics had been advised. However, she had not complied with this treatment. On interview she manifested persecutory delusions, formal thought disorder, and incongruent affect, but had no cognitive impairment. Both she and her physicist son were convinced that this illness was due to black magic and were reluctant to accept a psychiatric explanation for her troubles. She refused to take neuroleptics but agreed to see the general practitioner and a local faith healer for further help.

## Discussion

Beliefs in sorcery provide convenient explanations for events otherwise inexplicable in terms of the limited empirical knowledge prevailing in a society with a poorly developed technology. Our observations also suggest that a wide variety of physical and emotional illnesses can be attributed to sorcery. It may be noted that conversion disorders and somatisation disorders are the commonest diagnostic categories and occurred most often among women. This picture is very similar to the description of neurotic disorders elsewhere in south India among urban Muslim women (Janakiramaiah & Subbukrishna, 1980), psychiatric out-patient populations (Gautam & Kapur, 1978), and rural populations (Carstairs & Kapur, 1976); these authors consistently highlight the preference in this culture for somatic rather than psychological manifestations of their distress. The high prevalence of physical illnesses among patients with sorcery-attributed illnesses, particularly in those diagnosed as somatic, is in keeping with earlier reports of physical comorbidity in psychiatric populations (Keshavan *et al*, 1980).

Despite the somatic manifestation of most of our patient's ills, many of these patients had never consulted a medical doctor. Ostensibly, these patients sought care from the system which they believed to offer the appropriate cure for the cause of their illness. Many people in these areas had come to rely upon an indigenous health care system, one that is closely related to their sociocultural belief patterns. Western-style medical treatment is often quite foreign to this population, in that it is either inaccessible, not affordable or culturally alien. Had we not enlisted help by some local healers and other prominent members of the community, patients in this study may not even have come to us; our approach to therapy was to be empathic to both the individuals and their cultures. Our therapeutic interventions in this study, however, were limited to simple advice and prescription for straightforward maladies; the patients were referred for further management to appropriate medical or non-medical care-givers, or both – depending on the predominant nature of their problem (somatic, psychosocial or both, respectively) – within the community. The patients with conversion disorders frequently responded to placebo medication, strong suggestions and reassurance about the absence of serious illness. In dealing with their sorcery attributions, we carefully avoided confrontation of their belief systems.

Much remains to be done to explore the explanatory belief systems of people in this culture about the causes and cures of illnesses, the patterns of seeking health care and the characteristic therapeutic styles of the folk healers. Such knowledge may be expected to help effective development of medical and psychiatric services in this culture. Promising strategies may be to develop more innovative culturally compatible psychotherapeutic models applicable to situations such as those involving sorcery attribution (Neki *et al*, 1986) and the development, on a wide basis, of working relationships between modern medical and traditional healing systems (Carstairs & Kapur, 1976).

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# The Aetiology of Post-traumatic Morbidity: Predisposing, Precipitating and Perpetuating Factors

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A group of 469 firefighters were studied 4, 11 and 29 months after having an extreme exposure to a bushfire disaster. The relative importance of the impact of the disaster, personality and ways of coping were investigated as determinants of post-traumatic morbidity. Neuroticism and a past history of treatment for a psychological disorder were better predictors of post-traumatic morbidity than the degree of exposure to the disaster or the losses sustained. These results raise doubts about the postulated central aetiological role a traumatic event plays in the onset of morbidity.

Historically, there has been a long-standing controversy in psychiatric practice about the cause of mental illness that follows an extremely traumatic event (Horowitz, 1976). The uncertainty is about whether the severity of the trauma or the pre-morbid psychological vulnerability of the person involved is the most important factor. Both DSM–I and DSM–II conceptualised stress disorders as acute, time-limited phenomena that diminished unless some pre-existing character pathology was present which would contribute to symptom maintenance (Green *et al*, 1985). In contrast, DSM–III emphasises the central aetiological role of the traumatic event in its formulation of post-traumatic stress disorders (PTSD) (American Psychiatric Association, 1980). This change in classification followed a renewed discussion of the ongoing aetiological issues of post-traumatic morbidity in the setting of the aftermath of the Vietnam war.

Subsequent support for the validity of PTSD has come from a variety of studies that have examined the effects of war (Atkinson *et al*, 1984; Foy *et al*, 1984) and disasters (Erikson, 1979; Weisaeth, 1984). In a recent detailed examination of the nature of PTSD, Green *et al* (1985) concluded that "the nature and intensity of the stressor is the primary aetiological factor in individual differences in response to stress". They also emphasised that the characteristics of the individual and the recovery environment are important determinants of outcome because they can influence the processing of the stressful event.

This study aimed to examine the aetiological process in post-traumatic morbidity in a group of firefighters who had an extreme exposure to a devastating Australian bushfire disaster (McFarlane & Raphael, 1984). The relative importance of the disaster, post-disaster experiences and personality factors were examined 4, 11 and 29 months after the event. I hypothesised that the exposure to the disaster and the losses sustained would be the most important factors operating on all three occasions, but that post-disaster experiences and personality factors would play an increasing role in the perpetuation of post-traumatic morbidity.

The recurring and dominating memories of the traumatic event are another dimension that needs to be considered in the onset and course of PTSD (Brett & Ostroff, 1985). A number of researchers, particularly Horowitz (1976), have emphasised the central part played by the interaction of avoidance and intrusion of memories of the disaster, in combination with character style, in determining post-traumatic syndromes. Thus, the intensity of the cognitive and affective preoccupation in the immediate post-disaster period was also hypothesised to be a predictor of long-term morbidity.

## Method

### Study design

On 16 February 1983, bushfires devastated large areas of south-eastern Australia. A large organisation of trained volunteer firefighters exists in Australia to combat bushfires. Several thousand of these firefighters, who lived within and outside the blaze, attempted to control the disaster.

A four-stage longitudinal study design was used. A group of 469 firefighters was first surveyed four months after the disaster (McFarlane, 1987). Eight months after the fire 50 subjects were interviewed, to clinically establish whether PTSD did occur in this group, to validate the General Health Questionnaire (GHQ) as an instrument for detecting PTSD (McFarlane, 1986*b*) and to develop the questionnaire for the subsequent two stages of the study. The sampling method is described in detail elsewhere (McFarlane, 1987). Two further surveys of the whole original sample were made 11 months and 29 months after the fire. On both these occasions the questionnaire was posted to the subject's address with a reply-paid envelope. If no reply had been obtained within three weeks, two subsequent reminders were sent.

### Questionnaire design

The stage-1 questionnaire consisted of an inventory of the disaster, a brief inventory of life events before the disaster (McFarlane, 1987), the Impact of Event Scale (IES) (Horowitz *et al*, 1979) and the 12-item GHQ (Goldberg, 1972).

The inventory of the disaster documented the firefighter's bereavement and property loss, the injuries sustained and the nature and duration of their exposure to the fire (McFarlane, 1987). The IES measured post-traumatic distress, with its two components, intrusion (i.e. intrusive–repetitive images and thoughts) and avoidance (i.e. attempts to dispel these images and thoughts). The 12-item GHQ has been found to be a valid and sensitive measure of psychiatric impairment in Australian populations despite its brevity (Tennant, 1977; Henderson *et al*, 1981): in these firefighters, at the eight-month interviews, it was found to have a specificity of 90%, a sensitivity of 78%, a positive predictive value of 64% and a negative predictive value of 95% for PTSD, using a 1/2 cut-off (McFarlane, 1986*b*).

At 11 months, the brief life-events inventory (which examined events since the disaster), the IES and the 12-item GHQ were readministered. Also, a series of questions, developed from the eight-month interviews, asked about the methods used to deal with the disaster and the associated memories. One question specifically enquired whether it was characteristic for the subjects to try to stop themselves thinking about situations which might go wrong in their lives, in settings other than the disaster.

The 29-month questionnaire documented whether the firefighters had sought professional help for psychological problems before the disaster. The brief life-events inventory recording life events since the 11-month stage, the IES, the GHQ and the Eysenck Personality Inventory (EPI) (Eysenck & Eysenck, 1964) were also administered as a part of the questionnaire. The EPI has been found to be acceptable and reliable in Australian populations (Henderson *et al*, 1981). The prefix of the EPI was changed, asking subjects to describe their personality as it was before the fire, to minimise the degree to which this trait measure might have been confounded by the firefighters' post-traumatic morbidity.

### Statistical analysis

The data were analysed using the Statistical Package for the Social Sciences (SPPS Inc., 1983). A series of multiple regression analyses of the GHQ scores at 4, 11 and 29 months were calculated, because many of these variables were likely to be inter-related and the univariate methods of analyses used do not give any indication of the size of causal effect. Instead of just one equation for each time period, a series of stepwise equations were calculated to study the composition of the explained variance in more detail. These do not calculate the standard error for variables not entered into the equation.

Equation (a) examined the effect of the different components of the disaster. Because being close to or actually panicking during the fire might have been related to both the experience and personality, it was added in a separate equation (b). This aimed to examine whether arousal during the fire increased the effect of exposure. Equation (c) further added life events that had been experienced since the fire. This aimed to assess the relative importance of the disaster and subsequent adversity as determinants of post-traumatic morbidity.

Assuming the primary importance of the traumatic event in PTSD, it was only at this point that the contributions of pre-morbid personality factors and preceding adversity were examined, in equation (d). The frequency of post-traumatic imagery and fearfulness of another disaster were included in equation (e). They were added at the late stage of the analysis because it was possible these were confounded measures of disorder. Finally, the GHQ score of the previous stage or stages of the study was inserted into the regression equation (f) at 11 and 29 months to examine the predictive power of the GHQ score on future adjustment. Age and social class were inserted in all the regressions because no prior assumption could be made about their causal impact and this adjusted for their contribution to other variables.

These data should be interpreted in the light of the skewness of the GHQ. No single transformation could normalise the data at 4, 11 and 29 months. To take account of this potential source of error, a significance level of less than 0.01 for the *F* of the individual regression coefficients was taken as the criterion for interpretation (Table IV).

## Results

### Sample characteristics and disaster experience

Return rates of 84% ($n=395$) and 72% ($n=337$) were obtained at 11 and 29 months. A total of 315 subjects responded on all three occasions and 411 subjects responded on two occasions. During the course of the study four subjects were known to have died. At 11 and 29 months the response rates for those who were cases and not cases at the previous stage were not significantly different (McFarlane, 1986*b*). Thus the longitudinal sample at 11 and 29 months was not biased to a more or less disordered group. The mean age of the firefighters was 36.1 years (s.d. 10.6), 74% were married and 88% were Australian-born.

The individual experience of the disaster varied widely. The mean duration of fighting the fire was 15.6 hours, during which time 20% of the firefighters came close to panicking or panicked. Twenty-seven per cent were injured, and 12% of these were admitted to hospital. No first-degree relative of a firefighter was killed in the disaster, but 7% of the subjects experienced some bereavement due to the death of a more distant relative or close friend. Some degree of property damage, often affecting their livelihood, was suffered by 23% of the sample.

The mean GHQ scores at 4, 11 and 29 months respectively were 1.65, 1.39 and 1.53. The medians and interquartile ranges for the GHQ at 4, 11 and 29 months

TABLE I

*Multiple regression analysis of GHQ score at 4 months: regression coefficients (standard error) reported for significantly loading variables*[1]

| | *Equation (a)* | | *Equation (b)* | | *Equation (d)* | | *Equation (e)* | |
|---|---|---|---|---|---|---|---|---|
| Demographic variables | | | | | | | | |
| Age | −0.05 | — | −0.08 | — | −0.11 | — | 0.20 | (0.02)*** |
| Social class | 0.05 | — | 0.05 | — | −0.06 | — | −0.11 | — |
| Disaster-related variables | | | | | | | | |
| Property loss | 0.19 | (0.14)*** | 0.17 | (0.15)*** | 0.23 | (0.30)*** | 0.16 | (0.16)** |
| Bereavement | −0.01 | — | −0.03 | — | −0.03 | — | −0.05 | — |
| Exposure | 0.07 | — | 0.04 | — | 0.01 | — | −0.01 | — |
| Injury | 0.01 | — | 0.01 | — | 0.01 | — | −0.02 | — |
| Threat to life | 0.07 | — | 0.04 | — | 0.06 | — | 0.00 | — |
| Arousal during fire | | | | | | | | |
| Panic or close to panic | — | — | 0.23 | (0.30)*** | 0.08 | — | 0.05 | — |
| Predisaster variables | | | | | | | | |
| Neuroticism | — | — | — | — | 0.23 | (0.03)*** | 0.09 | — |
| Extraversion | — | — | — | — | −0.11 | — | −0.22 | (0.04)*** |
| Past history of psychological disorder | — | — | — | — | 0.15 | (0.47)** | 0.18 | (0.46)** |
| Avoid thinking of problems | — | — | — | — | 0.08 | — | 0.04 | — |
| Life events before the fire | — | — | — | — | 0.17 | (0.17)** | 0.22 | (0.16)*** |
| Other variables | | | | | | | | |
| 4-month IES score | — | — | — | — | — | — | 0.31 | (0.01)*** |
| Fear of another fire | — | — | — | — | — | — | −0.07 | — |
| Total variance explained (adjusted $r^2$) | 0.03 | | 0.08 | | 0.19 | | 0.29 | |

1. Equation (c) not calculated because no events between the disaster and the first stage were measured.
**Significance of $F$ for individual variable $\leq 0.01$.
***Significance of $F$ for individual variable $\leq 0.001$.

respectively were 0 (0–2), 0 (0–2) and 0 (0–2), with a possible range of 12. When the prevalence of cases was calculated using the 1/2 cut-off on the 12-item GHQ, 32% were cases at 4 months, 27% at 11 months and 30% at 29 months. The median IES scores and interquartile ranges at 4, 11 and 29 months respectively were 15.0 (4–29), 7.0 (2–17) and 4.0 (0–10), with a possible range of 75. The mean scores for the EPI scales were 11.2 (s.d. = 4.2) for extroversion, 8.7 (s.d. = 5.3) for neuroticism and 3.5 (s.d. = 1.8) for the lie scale.

### Regression analysis of four-month GHQ

When the impact of the disaster alone was examined (Table I), only property loss accounted for a significant amount of the variance (3%). When panic was added a further 5% of the variance of the GHQ was defined. When the pre-disaster variables were added to the analysis (equation (d)) they accounted for 11% of the variance, neuroticism making the greatest contribution. Property loss continued to contribute to the variance but panic did not, indicating how this response was partially related to pre-morbid traits, its effect being cancelled out when neuroticism was also entered in the equation. When the IES score was added to the equation (step (e)), the contribution of the disaster and pre-morbid variables was decreased, indicating that the intensity of post-traumatic distress was partially related to neuroticism and property loss. The GHQ score was not highly predicted by the intensity of post-traumatic distress, the IES score accounting for only 14% of the variance.

### Regression analysis of 11-month GHQ

By 11 months (Table II), property loss no longer contributed to the variance of the GHQ (equation (a)). Panic, however, accounted for 3% of the variance (equation (b)). Life events in the post-disaster period accounted for 4% of the variance of disorder (equation (c)), but this effect was lost in equation (d) when pre-morbid variables were included, indicating the covariance of the reporting of life events and neuroticism. Again the interdependence of neuroticism and the IES score was indicated in equation (e), when the IES score more than halved the variance attributable to neuroticism. Equation (f) demonstrated that symptoms at four months predicted 25% of the variance of the GHQ at 11 months, and they accounted for the role of all other measures except the IES score.

TABLE II

*Multiple regression analysis of GHQ score at 11 months: regression coefficients (standard error) change reported for significantly loading variables*[1]

| | *Equation (b)* | *Equation (c)* | *Equation (d)* | *Equation (e)* | *Equation (f)* |
|---|---|---|---|---|---|
| Demographic variables | | | | | |
| Age | −0.05 — | −0.05 — | −0.04 — | −0.04 — | −0.03 — |
| Social class | −0.001 — | −0.02 — | −0.07 — | −0.09 — | −0.04 — |
| Disaster-related variables | | | | | |
| Property loss | 0.04 — | 0.02 — | 0.15 (0.15)* | 0.11 — | 0.01 — |
| Bereavement | 0.04 — | −0.05 — | −0.05 — | −0.05 — | −0.04 — |
| Exposure | 0.03 — | 0.00 — | 0.04 — | 0.03 — | 0.01 — |
| Injury | −0.05 — | −0.05 — | −0.04 — | −0.07 — | −0.07 — |
| Threat to life | 0.00 — | −0.01 — | −0.02 — | −0.03 — | −0.04 — |
| Arousal during fire | | | | | |
| Panic or close to panic | 0.17 (0.27)* | 0.14 (0.28)* | 0.15 (0.32)* | 0.14 (0.33)* | 0.11 — |
| Post-disaster variables | | | | | |
| Life events 0–11 months | — — | 0.18 (0.12)** | 0.07 — | 0.04 — | 0.01 — |
| Predisaster variables | | | | | |
| Neuroticism | — — | — — | 0.28 (0.03)*** | 0.18 (0.03)** | 0.12 — |
| Extraversion | — — | — — | 0.01 — | −0.03 — | 0.03 — |
| Past history of psychological disorder | — — | — — | 0.13 — | 0.03 — | 0.00 — |
| Avoid thinking about problems | — — | — — | — — | 0.08 — | 0.11 — |
| Life events before disaster | — — | — — | 0.08 — | 0.08 — | 0.01 — |
| Other variables | | | | | |
| 4-month IES | — — | — — | — — | 0.24 (0.01)*** | 0.18 (0.01)** |
| Fear of another fire | — — | — — | — — | −0.09 — | −0.05 — |
| 4-month GHQ | — — | — — | — — | — — | 0.43 (0.05)*** |
| Total variance explained (adjusted $r^2$) | 0.03 | 0.05 | 0.13 | 0.16 | 0.27 |

1. Regression equation not calculated for equation (a) by SPSS program as no variable reached $P<0.05$ level of significance: total variance explained by equation (a) = 0.00.

*Significance of $F$ for individual regression coefficients $\leqslant 0.05$.
**Significance of $F$ for individual regression coefficients $\leqslant 0.01$.
***Significance of $F$ for individual regression coefficients $\leqslant 0.001$.

### Regression analysis of 29-month GHQ

By 29 months (Table III), the disaster no longer contributed to the variance of the GHQ score as indicated by equation (a). The amount of variance attributable to adversity experienced between 11 and 29 months was 12%. This was the greatest contribution of adversity to any of the regression analyses, including the disaster. This was decreased to 6% when pre-disaster variables were added to the equation, again indicating the inter-relationship between neuroticism and the reporting of adversity. The four-month IES score no longer predicted the GHQ score (equation (e)). In contrast, the four-month GHQ continued to predict 8% of the variance of disorder, even taking neuroticism into account (equation (f)).

### Longitudinal effects

Table IV summarises the maximum and minimum variance accounted for by disaster-related variables, other life events, pre-disaster variables and post-traumatic distress. At no time, independent of whether the maximum or minimum variance was examined, did the disaster account for a greater effect than predisaster variables. Except at four months, other life events accounted for a similar or greater amount of variance than the disaster. The psychological morbidity four months after the disaster was the major predictor of disorder at 11 months. However, by 29 months pre-disaster variables played a greater aetiological role.

## Discussion

Contrary to prediction, this study found neither the severity of exposure to the disaster nor the losses sustained to be the major determinant of post-traumatic morbidity in the firefighters. While these factors appeared to play a significant role in the immediate post-traumatic morbidity experienced, no detectable contribution was present at 29 months (Tables I–IV).

TABLE III

*Multiple regression analysis of GHQ score at 29 months: regression coefficients (standard error) change reported for significantly loading variables*[1]

| | *Equation (b)* | *Equation (c)* | *Equation (d)* | *Equation (e)* | *Equation (f)* |
|---|---|---|---|---|---|
| Demographic variables | | | | | |
| Age | −0.06 — | −0.10 — | −0.05 — | −0.04 — | −0.05 — |
| Social class | 0.04 — | 0.02 — | −0.06 — | −0.06 — | −0.05 — |
| Disaster-related variables | | | | | |
| Property loss | −0.04 — | −0.04 — | −0.05 — | −0.05 — | −0.10 — |
| Bereavement | 0.01 — | 0.04 — | 0.01 — | 0.03 — | 0.03 — |
| Exposure | 0.06 — | 0.06 — | 0.06 — | 0.02 — | −0.02 — |
| Injury | 0.06 — | 0.07 — | 0.04 — | 0.07 — | 0.04 — |
| Threat to life | 0.00 — | 0.03 — | 0.03 — | 0.05 — | 0.00 — |
| Arousal during fire | | | | | |
| Panic or close to panic | 0.14 (0.32)* | 0.08 — | 0.03 — | 0.04 — | 0.04 — |
| Post-disaster variables | | | | | |
| Life events 0–11 months | — — | 0.02 — | −0.06 — | −0.07 — | −0.08 — |
| Life events 11–29 months | — — | 0.35 (0.16)*** | 0.29 (0.19)*** | 0.24 (0.19)*** | 0.20 (0.18)*** |
| Predisaster variables | | | | | |
| Neuroticism | — — | — — | 0.36 (0.03)*** | 0.37 (0.03)*** | 0.32 (0.03)*** |
| Extraversion | — — | — — | −0.03 — | −0.05 — | −0.01 — |
| Past history of psychological disorder | — — | — — | 0.16 (0.38)** | 0.18 (0.40)** | 0.13 (0.39)* |
| Avoid thinking about problems | — — | — — | 0.06 — | 0.06 — | 0.02 — |
| Life events before the disaster | — — | — — | −0.01 — | −0.00 — | −0.04 — |
| Other variables | | | | | |
| IES score at 4 months | — — | — — | — — | 0.01 — | −0.04 — |
| Fear of another fire | — — | — — | — — | 0.02 — | 0.01 — |
| GHQ at 4 months | — — | — — | — — | — — | 0.24 (0.05)*** |
| GHQ at 11 months | — — | — — | — — | — — | 0.13 — |
| Total variance explained (adjusted $r^2$) | 0.02 | 0.12 | 0.30 | 0.31 | 0.34 |

1. Regression equation not calculated for equation (a) by SPSS program as no variable reached $P<0.05$ level of significance: total variance explained by equation (a) = 0.00.

*Significance of $F$ for individual regression coefficients $\leqslant 0.05$.

**Significance of $F$ for individual regression coefficients $\leqslant 0.01$.

***Significance of $F$ for individual regression coefficients $\leqslant 0.001$.

TABLE IV

*Summary of the maximum and minimum variance*[1] *(%) of GHQ score explained by different groups of variables*

| | *Variance at 4 months (%)* | | *Variance at 11 months (%)* | | *Variance at 29 months (%)* | |
|---|---|---|---|---|---|---|
| | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* |
| Disaster-related variables[2] | 8 | 2 | 4 | 0 | 0 | 0 |
| Life events | 4 | 3 | 4 | 0 | 12 | 4 |
| Predisaster variables | 10 | 9 | 9 | 0 | 26 | 22 |
| 4-month IES score | 14[3] | | 12 | 2 | 0 | 0 |
| Previous GHQ score | —[4] | | 25[3] | | 8[3] | |
| Maximum variance explained | 29 | | 27 | | 34 | |

1. Only variables with significance of $F \leqslant 0.01$ included.
2. As defined in Table I.
3. The variance explained by the last group of variables added to the regression equations was examined only once.
4. No previous GHQ score existed at this stage.

These findings about the determinants of chronic psychiatric morbidity are similar to those of three other studies that have followed a cohort of subjects exposed to a variety of traumatic experiences. In their study of the bereaved, Clayton & Darvish (1979) demonstrated that those 16% who remained clinically depressed 13 months after the death could not be distinguished on the basis of a range of environmental, demographic or phenomenological variables or the nature of the death. Rather, the presence of a past psychiatric illness was the only predictor of persistent depressive symptoms at 13 months. Helzer *et al*'s (1979) study of Vietnam veterans compared the role of combat one year and three years after active service as a cause of depression. They concluded that the development of a depressive syndrome was influenced by prior combat experience at the first follow-up (4% of the variance), but that this effect was insignificant by the time of the second interview. Weisaeth's (1984) study of an industrial accident found that the prevalence of acute PTSD was influenced by the initial intensity of exposure, but that the prognosis at four years was determined more by pre-accident psychological functioning than by the intensity of exposure to the explosion. These three studies provide general support for the conclusion that the longitudinal outcome of psychological morbidity, arising in a close proximity to an extreme stressor, is better predicted by pre-disaster variables than the nature of the victims' exposure or losses.

This conclusion needs to be considered against the background of several methodological issues. The first possibility was that the inventory of the disaster was a source of type II error. The inventory used in this study collected information about a number of components of the disaster and covered the full range of losses and exposure in considerable detail. Therefore failure to support Green *et al*'s (1985) hypothesis that "the primary aetiological factor is the nature and the severity of the stressor" was unlikely to have been due to the insensitivity of the measurement of the disaster's impact.

Another possible explanation for this negative finding was that these firefighters' exposure to the disaster was an insufficient experience to cause a true PTSD. On the contrary, there must be few experiences as terrifying as a major fire (McFarlane & Raphael, 1984).

A third possible explanation for the small role of the disaster was the insensitivity of the 12-item GHQ as a measure of post-traumatic morbidity. However, at 11 and 29 months a further 16 questions specifically exploring the phenomenology of PTSD were added to the questionnaire, and these items were highly correlated with the GHQ (11 months, $r=0.93$, $P=0.000$; 29 months, $r=0.94$, $P=0.000$). When these items were added to the GHQ and multiple-regression analyses performed as in Tables I–III, the amount of variance explained was at the most increased by 7%. This was at 29 months and was accounted for by life events experienced after the disaster. The fact that the amount of variance explained by the disaster was not more substantially increased by this manoeuvre suggests that the possible insensitivity of the GHQ was unlikely to explain these unpredicted results.

A further methodological issue was that this population was not studied before the event, so that it was not possible to exclude subjects who were disordered before the disaster. Therefore, the relationship between the disaster and the onset of post-traumatic morbidity was contaminated by the inclusion of such subjects. On the other hand, PTSD is a disorder whose onset can be directly attributed to the disaster. When the GHQ was validated in this group, it was found to have a specificity of 90% for detecting PTSD, indicating that only a small minority of the subjects had other disorders which may or may not have been precipitated by the disaster. This means that the error introduced by including these subjects, while worthy of consideration, was not likely to have accounted for a major percentage of the variance in these firefighters.

Similarly, the administration of the EPI 29 months after the disaster means that this trait measure is likely to have been partly confounded by the presence of disorder triggered by the disaster. However, its validity as a trait measure was demonstrated by its greater stability over 20 months in 50 subjects (neuroticism $r=0.67$) compared with the GHQ ($r=0.29$).

Finally, these data are all based on self-report measures, limiting the strength of conclusions. However, a subgroup of 143 subjects have subsequently been interviewed, 42 months after the disaster, to further validate these findings. These data will be reported in a later paper.

The role of other life events, apart from the fire, as a cause of psychiatric morbidity was specifically examined in this study. When the maximal or minimal effect of the disaster and these life events was taken into account, at no point did the disaster predict a substantially greater percentage of the variance than such events. Even at four months, the amounts of variance predicted by the disaster and other life events were of a similar order of magnitude when panic, a response to the fire partly predicted by predisaster personality factors, was excluded from the equation (Table I). This suggested that the disaster did not have a quantitatively different effect from other life events (McFarlane, 1987).

By 29 months the role played by life events experienced after the disaster appeared to have changed. The maximal variance explained by life events at this time was 12% (Table III). This could be interpreted to indicate that life events have a more important role in perpetuating post-traumatic morbidity than in contributing to its onset. In particular, disaster victims may become unusually vulnerable to subsequent adversity and unable to contain or manage further disruption because these events re-evoke their post-traumatic distress.

At all three stages of this study, pre-morbid vulnerability accounted for a greater percentage of the variance of disorder than the impact of the disaster (Table IV). This effect was greatest at 29 months, when it accounted for a maximum of 26% of the variance of disorder. This suggested that pre-morbid factors were a more important cause of chronic post-traumatic morbidity than acute disorder. Neuroticism appeared to be the predominant trait playing an aetiological role. However, the contribution of neuroticism was substantially smaller than that found by Henderson *et al* (1981) in their longitudinal study of psychiatric impairment in a large Australian community. They found that neuroticism accounted for 69% of the disorder they observed in an urban community, also using the GHQ. While their data are not strictly comparable, it would suggest that trait neuroticism may play a less important role in the onset and maintenance of post-traumatic morbidity than in the types of psychiatric impairment more commonly present in an urban community. This provides some support for the relative importance of the event in PTSD, in contrast to other psychiatric disorders.

A past history of treated psychiatric disorder also was a predictor of PTSD (Tables I and III). This raises questions about the role that genetic and familial factors may play in PTSD (Davidson *et al*, 1985). The severity of the psychological stress associated with a disaster may mean that any genetic vulnerability to depression or pathological anxiety has a significant chance of being manifest in such a setting (McFarlane, 1986*a*).

Cognitive and emotional preoccupation with fire (IES score) was another variable examined. This study found that, in the months immediately after the disaster, such post-traumatic distress played an important role in the onset of disorder (McFarlane, 1988). However, contrary to prediction, the initial level of cognitive and emotional preoccupation did not determine the long-term outcome at 29 months. This raises questions about the exact role that imagery and cognitions play in the aetiology of PTSD, because these data suggest that a number of people experience such imagery without becoming disordered. Also the stepwise addition of the IES score at four months led to a significant drop in the amount of variance of the GHQ score explained by neuroticism (Table I). Thus, while cognitive and emotional pre-occupation with the trauma may be an important aetiological factor in PTSD, it may also be, in part, an indirect marker of neuroticism. In other words, anxiety-prone individuals may be especially likely to become pre-occupied by a traumatic event.

The maximum percentage of the variance explained at 4, 11 and 29 months respectively was 29%, 27% and 34% (Table IV). While the skewness of the GHQ may have partly contributed to the amount of variance unaccounted for, these data suggest that a number of other unexamined factors must be playing a major causative role. One possible variable was social support. In the 11-month questionnaire, these firefighters were asked to indicate which of five coping methods they had used in the period immediately following the disaster. Those firefighters who were disordered at 11 months ($\chi^2=3.99$, $P=0.04$) and 29 months ($\chi^2=5.55$, $P=0.01$) were significantly more likely to have nominated support from fellow firefighters as a method that helped them cope with the disaster. This may indicate that the need for social support is greater in people adversely affected by an event, and that although it was perceived as beneficial, such social support does not prevent the onset of disorder.

The inventory of the disaster used in this study attempted to objectify and quantify the individual's experience of the disaster. As in life events research, the aim was to exclude the individual's perception of the event because this can be a contaminated measure of disorder (Brown *et al*, 1973). This step is necessary because people's memories of an event are likely to change if they become psychiatrically disturbed by the event. Paradoxically, the need to objectify the impact of the event may prohibit measurement of a very important aetiological variable. For example, people's perceptions of the threat and losses sustained in a disaster often can have little to do with their actual experience (McFarlane, 1986*a*). This perception may be one of the important determinants of how an individual responds to the trauma.

The findings of this study suggest that the aetiology of psychiatric disorders that are precipitated by extreme adversity should be viewed as a longitudinal process. The relative sizes of the contributions and the nature of the effect of premorbid characteristics and the impact of the disaster would appear to have changed with time. While extreme adversity plays a central precipitating role in the onset of post-traumatic morbidity, this study raises questions about the hypothesised aetiological process in PTSD, because the data at no stage demonstrated that the event had a greater formative effect than predisposing pre-morbid characteristics (Green *et al*, 1985).

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# Is Electroencephalographic Monitoring of Electroconvulsive Therapy Clinically Useful?

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Electroencephalographic (EEG) monitoring was carried out in 169 bilateral and 114 unilateral applications of electroconvulsive therapy (ECT), given to 51 patients in an everyday setting within the National Health Service by junior medical staff. In 2.5% of bilateral and 8% of unilateral applications there was disagreement between clinical and EEG assessment as to whether a fit had occurred. When an EEG fit was said to have occurred only if it lasted longer than 25 seconds, then disagreement rose to 7% in bilateral and 28% in unilateral applications; disagreement was higher with unilateral applications, as they produced more short fits than bilateral applications. If future work shows duration of seizure is clearly associated with clinical efficacy, it is suggested the case for routine EEG monitoring is greatly strengthened.

Pippard & Ellam (1981*a*), in a survey of electroconvulsive therapy (ECT) in Great Britain, found that junior doctors may falsely diagnose an ECT-induced fit on the basis of the tonic contraction at the time of electrical stimulus. The American Psychiatric Association (APA) (1978) expressed similar concern and recommended routine EEG monitoring of ECT to determine that a fit had taken place and to ensure it was of adequate length. The case for EEG monitoring was further emphasised by Christensen & Koldbaek (1982), who found 43% of fits inadequate in terms of EEG signs when judged by clinical observation alone.

The present study attempts to answer two questions – how good in an everyday setting within the National Health Service is the agreement between clinically observed fits and those determined by EEG monitoring, and is routine monitoring therefore necessary? As a by-product of the study, the length of fits was measured and a tentative comparison between unilateral and bilateral treatments made.

## Method

At Crichton Royal Hospital, Dumfries, ECT is carried out twice weekly in two admission wards. Treatment is administered by psychiatric and general practice trainees, all of whom have received instruction by a consultant psychiatrist in the technique. The anaesthetic is administered by trainees from the local infirmary. Bilateral ECT was given on 169 separate occasions to 34 patients (mean 5.0 treatments per patient) with various diagnoses, mainly depression ($n=21$) (ICD-9 296.1, 296.3, 296.4, 300.4 (World Health Organization, 1978)) and schizophrenia ($n=9$) (ICD-9 295). Unilateral ECT, administered to the right hemisphere, was given to 17 patients with a broadly similar diagnostic spread (depression: $n=12$; schizophrenia: $n=3$); they received 114 separate treatments (mean 6.7). For all treatments an Ectron Duopulse constant-current model was used to induce the fit. 'Position 1' for four seconds was used in all cases. With all bilateral and most (61%) unilateral applications, pulse repetition rate was 26 per second, pulse width 1.25 ms and output current 850 mA; the output values were 110 mC, 28 J. At the manufacturer's suggestion, the ECT apparatus was modified in February 1987 to provide increased power at each of the timing positions. Thus 39% of the unilateral applications were at a pulse repetition rate of 35 per second; the output values were 149 mC, 38 J.

Simultaneous EEG monitoring using a modified Nihon-Kohden single-channel recorder was carried out (details on request). The EEG leads were placed bifrontotemporally. The first psychiatrist monitoring the EEG was blind to the clinical effect of the application, and sought the opinion of the second psychiatrist applying ECT immediately after treatment as to whether or not a seizure occurred. The second psychiatrist was not asked to measure clinically the length of the fit, and remained blind to the result of the EEG recording. The duration of the EEG fit was measured from the end of the stimulus to post-ictal flattening or the last spike (<80 ms) where no flattening occurred. Assessment and measurement of an EEG fit produced by bilateral ECT was made by one psychiatrist, unilateral ECT produced fits by another. Inter-rater agreement was assessed in 20 EEGs read by both psychiatrists.

The following data were recorded for each ECT application: patient's name, age, sex, diagnosis, current psychotropic medication and number of previous applications of ECT; name of anaesthetist and dose of anaesthetic and relaxant; name of psychiatrist administering ECT; presence or absence of fit both clinically and from the EEG, and length of EEG fit.

## Results

Inter-rater agreement on length of EEG fits was high: inter-rater correlation (Pearson $r$) was $+0.92$ ($P<0.001$), and there was no significant difference between raters in group mean length of fits (48.4 s v. 47.1 s). There were no

TABLE I
*Agreement between EEG recording and clinical fit*

| *Total number of applications* | *Bilateral application (n = 169)* | *Unilateral application (n = 114)* |
|---|---|---|
| Poor EEG recording | 7 | 4 |
| EEG fit/no clinical fit | 1 (1) | 5 (2) |
| No EEG fit/clinical fit | 3 (11) | 4 (29) |
| No EEG fit/no clinical fit | 4 (4) | 6 (9) |
| EEG fit/clinical fit | 154 (150) | 95 (72) |
| Agreement (excluding poor EEG recordings) | 97.5% (93%) | 92% (82%) |

Figures in parentheses refer to agreement when EEG fit is said to have occurred only if it lasted longer than 25 s.

significant differences between groups in the unilateral and bilateral series in patients' age and number of previous applications of ECT. Proportionately more males received bilateral ECT: 11 males and 23 females received bilateral, two males and 15 females unilateral ECT, but this difference did not reach statistical significance. The mean dose of anaesthetic, methohexitone sodium, was significantly greater in patients given bilateral applications (75 mg v. 60 mg: $t = 2.20$, $P < 0.05$), as was the dose of muscle relaxant, suxamethonium chloride (34 mg v. 27 mg: $t = 3.74$, $P < 0.001$). A statistically non-significant trend was that more patients in the bilateral group received, during the course of treatment, benzodiazepines, antidepressants and antipsychotics.

In four of 169 bilateral applications and nine of 114 unilateral applications, there was disagreement between clinical and EEG assessment (Table I). The four disagreements in the bilateral series occurred in two patients; of the nine in the unilateral series, eight were accounted for by two female patients aged 61 and 78 years. Thus disagreement was more frequent in the unilateral series – 8% v. 2.5% of applications, 18% v. 6% of patients, but this did not reach statistical significance ($\chi^2$). The total number of disagreements was small and inspection of the data did not suggest any of the following variables were associated with disagreement: the psychiatrist administering ECT, the anaesthetist, dosage of anaesthetic and relaxant, and order effect of ECT.

An alternative analysis considered the duration of the fit, as the APA (1978) stated that an EEG-monitored fit of 25 s or less was "probably not clinically effective". Fewer bilateral (5%) than unilateral (22%) applications produced fits of less than 25 s. Five of 34 patients receiving bilateral ECT had at least one fit of 25 s or less, and ten of 17 unilateral patients ($\chi^2 = 8.61$; $P < 0.01$). If an EEG fit is said to have occurred only when it lasted at least 25 s, then in 12 bilateral and 31 unilateral applications there was disagreement between clinical and EEG assessment. The 12 disagreements in the bilateral series occurred in six patients, the 31 unilateral in ten patients; thus disagreement was found more often in patients given unilateral ECT ($\chi^2 = 7.11$, $P < 0.01$). Length of fits was not associated with any of the following variables: patients' age and diagnoses, whether or not patients were receiving concurrent psychotropic medication, and number of ECT applications before present course. There was a statistically non-significant trend in the bilateral group towards shorter fits later in the course of treatments (e.g. for those who received six treatments, the mean length of treatment 1 was 73.7 s, of treatment 6 54.8 s).

## Discussion

The results in the series of bilateral ECT suggest clinical observation is sufficient to detect a fit in everyday settings. In the unilateral series there was disagreement in 8% of administrations; it may therefore be advisable to use routine EEG monitoring with unilateral applications. The overall high success rate with both bilateral and unilateral applications may be because of practical instruction given to new trainees by a consultant psychiatrist, designated by the hospital to take an interest in the administration of ECT, as recommended by the Royal College of Psychiatrists (Pippard & Ellam, 1981*b*).

When an EEG fit was taken to have occurred only when it lasted longer than 25 seconds, disagreement rose considerably in the bilateral (7%) and the unilateral (28%) series. No attempt though was made to measure the length of the clinical fit. If this had been done, and the same criterion applied to the length of clinical fits, disagreement might have been less, although a previous study (Christensen & Koldbaek, 1982) found a correlation of only +0.5 between length of clinical and EEG fits. Also, Zorumski *et al* (1986) found that mean EEG seizure time per patient correlated positively with outcome, but not clinically measured seizure time. Thus disagreement, when assessed by EEG fit length, may be large enough to warrant routine EEG monitoring. However, this would be necessary only if seizure duration is clearly associated with clinical efficacy. Previous work in this field yields conflicting results. For example, Miller *et al* (1985) and Rich & Black (1985) found no evidence that the antidepressant efficacy of unilateral ECT was a function of seizure duration. Conversely, Cooper *et al* (1985), studying a small number of patients given bilateral ECT, suggested a certain minimum total amount of seizure may be necessary to obtain stable clinical remission; Zorumski *et al* (1986), in a study of patients given mainly bilateral ECT, found it unusual to see clinical benefit with less than 200 seconds of accumulative seizure, but once over 300 seconds almost 90% of subjects responded favourably.

Unilateral applications produced more short fits than bilateral applications, even though 39% of unilateral applications delivered more energy than those in the bilateral series, the dose of both anaesthetic and muscle relaxant was less, and fewer patients were receiving concurrent benzodiazepines. Too much must not be made of this finding, however, as patients were not randomly assigned to unilateral or bilateral ECT. Again, previous work is confusing: Horne *et al* (1985) found no difference between bilateral and unilateral ECT in the number of 'brief' seizures, while Fink & Johnson (1982) found in only four of 20 patients given unilateral ECT that every application of current elicited a seizure greater than 25 seconds.

We conclude that junior medical staff in the National Health Service can recognise, clinically, fits produced by bilateral ECT; unilateral ECT may warrant EEG monitoring. If future research shows fit length is therapeutically crucial, the case for routine EEG monitoring is greatly strengthened.

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# Respiratory Control: Its Contribution to the Treatment of Panic Attacks

## A Controlled Study

GEORGE A. HIBBERT and MICHAEL CHAN

Patients who experienced panic attacks, with or without avoidance, were treated for two weeks with either training in controlled breathing or a placebo treatment. Subsequently, both groups received a limited period of conventional anxiety treatments, most commonly *in vivo* exposure. Patients were subdivided into 'hyperventilators' and 'non-hyperventilators' on the basis of the conventional provocation test. Observer ratings of anxiety showed a greater improvement for the group that received breathing training, but there was no evidence that 'hyperventilators' benefited more from respiratory training than 'non-hyperventilators'. Self-report measures of anxiety, avoidance, and depression/dysphoria showed no difference between treatments. These findings suggest that training in controlled breathing is not of specific benefit for those identified as 'hyperventilators' by the provocation test, but that it may have a non-specific effect in the treatment of patients with panic attacks.

It has been suggested that hyperventilation is the origin of many of the symptoms of panic attacks in some patients (Kerr *et al*, 1937; Lum, 1976; Clark, 1979; Garssen *et al*, 1983). The strongest evidence for this has been the observation that voluntary overbreathing for two minutes (the 'provocation test') can produce a state which a substantial proportion of patients recognise as similar to their naturally occurring attacks. Lewis (1954) proposed a model for the generation of panic attacks, in which psychic or somatic processes lead to arousal, which provokes hyperventilation, causing apprehension and arousal, which in turn cause further hyperventilation.

It has been claimed that patients identified by the provocation test as hyperventilators can be treated successfully by training them to control their breathing (Lum, 1981). Typically, however, studies of such treatment either do not provide sufficient data (Compernolle *et al*, 1979; Lum, 1983), or have too few subjects (Doorn *et al*, 1982; Bonn *et al*, 1984). A controlled study of non-psychiatric patients identified as hyperventilators (whose comparability with patients with panic attacks is difficult to assess) showed significant effects using pacing and biofeedback of respiratory rate (Grossman *et al*, 1985).

In psychiatric patients with panic attacks, the most convincing evidence for the effectiveness of breathing training is the study by Clark *et al* (1985), which showed substantial and rapid improvement in the frequency of panic attacks and level of anxiety in a group of hyperventilators. Their treatment, however, not only involves training in respiratory control, but also has elements of formal cognitive therapy, which focus on bringing about a re-attribution of panic symptoms to hyperventilation instead of the catastrophes many patients fear (Beck *et al*, 1974; Hibbert, 1984). As the study did not include a control treatment or a control group of 'non-hyperventilators', it is not possible to say which elements of the package were effective – the breathing training alone, the cognitive approach, or other aspects. Nor is it possible to comment on the specificity of the treatment effect for hyperventilators.

The respiratory control training used by Clark *et al* (1985) is attractive because it is simple and brief and requires no special equipment. The rationale given to patients identified as hyperventilators, which is consistent with the hypothesis proposed in the literature, is that hyperventilation induces panic by causing the physical symptoms they fear, and that control of it will control their symptoms. If the provocation test is correctly distinguishing hyperventilators from non-hyperventilators, breathing training alone should be effective in controlling panic attacks in the hyperventilators only. The introduction by Clark *et al* (1985) of cognitive therapy techniques (Socratic questioning, identifying catastrophic thoughts, rehearsing and testing rational, non-catastrophic responses etc.), which demand special training not available to the majority of clinicians, complicates assessment of the effectiveness of breathing training and should not, in theory, be necessary. The aim of this study has, therefore, been to assess the effectiveness and specificity of Clark *et al*'s respiratory control training without the cognitive therapy.

## Method

### Subjects

Forty consecutive out-patient referrals were included in the trial and assigned to either training in respiratory control or placebo treatment through a randomising procedure. All patients completed treatment. They met the following criteria: (a) they were experiencing repeated panic attacks (the relevant DSM–III categories (American Psychiatric Association, 1980) were generalised anxiety disorder, panic disorder and agoraphobia with panics); (b) they did not satisfy the DSM–III criteria for major depression or alcoholism; (c) they had no previous diagnosis of psychotic illness; and (d) there was no evidence of severe physical illness.

### Measurement of outcome

The following measures were used.

(a) Observer ratings: (i) Hamilton Anxiety Rating Scale (Hamilton, 1959); (ii) visual analogue scale, anchored at 0 with 'not at all anxious' and at 100 with 'extremely anxious', rating overall severity of anxiety during the previous week.

(b) Self-ratings: (i) daily panic attack and exposure diary, recording frequency and severity of panic attacks, duration of exposure to feared situations and the degree of anxiety produced, and medication taken; (ii) Marks & Mathews (1979) fear questionnaire, which contains measures of avoidance, dysphoria and global distress; (iii) check-list (Clark & Hemsley, 1982) for symptoms occurring during panic attacks; and (iv) the Beck Depression Inventory (Beck & Beamsderfer, 1974).

### Procedure and experimental design

A randomised, placebo-controlled design was used. Blind-observer ratings were achieved by each of the two therapists acting as assessor for the other therapist's patients. At initial assessment all observer-rated and self-rated scales were completed and the patient started the panic attack diary. Clear instructions were given at initial assessment that there should be no change in the subject's pattern of exposure to feared situations until further notice. The rationale was that patients should allow sufficient time to benefit from the initial phase of treatment before attempting increased exposure and that starting exposure too soon would undermine their confidence. Patients were also instructed to make no changes to their medication while in treatment (daily diary records of medication confirmed that no significant changes occurred). Patients continued daily diaries during the four-week pretreatment baseline period that followed assessment, and throughout treatment. Self-ratings were repeated at the start of every treatment session.

### The provocation test

Patients were identified as hyperventilators or non-hyperventilators using the provocation test. The provocation test is a key part of the first treatment session in the study by Clark *et al* (1985) and has been used to introduce breathing training in many previous descriptions of the treatment of hyperventilators (Lewis, 1959; Compernolle *et al*, 1979; Doorn *et al*, 1982; Bonn *et al*, 1984; Grossman *et al*, 1985). However, it was felt that a positive result on the provocation test might have important therapeutic effects and might contaminate the placebo condition. In order to replicate Clark *et al*'s protocol, patients in the respiratory control group therefore did the provocation test as part of the first treatment session while placebo patients did it after final assessment.

### The two treatment conditions

Initially, patients were given two sessions of either respiratory control training alone or placebo treatment alone, with an interval of one week between sessions. Patients were again specifically instructed not to increase their exposure to feared situations during this part of treatment. At the third session additional treatment measures were introduced.

### The treatments

#### *Respiratory control*

The procedure followed the steps outlined by Clark *et al* (1985) but without the cognitive therapy. The first treatment session started with the provocation test. This consisted of: (a) instructions in the use of a paper bag for rebreathing, (b) two minutes of forced ventilation, (c) rebreathing with the bag, (d) completion of a similarities questionnaire (Clark *et al*, 1985) to assess the similarity between the effects of overbreathing and naturally occurring panic attacks, and (e) completion of a symptom rating sheet (Clark & Hemsley, 1982) covering most of the symptoms commonly ascribed to hyperventilation. It was decided in advance that patients would be accepted as 'hyperventilators' if they scored 60% or more on the similarities questionnaire or 50% if the only difference was in the severity of the symptoms induced. For those identified as hyperventilators the provocation test was used as the basis for explaining the role of hyperventilation in causing their symptoms. It was pointed out that the provocation of their symptoms voluntarily by overbreathing was inconsistent with their fear that the symptoms were a sign of physical or mental illness. This provided a rationale for the training in paced breathing which followed, which, with the help of both a handout and tape-recorded pacing instructions, continued as daily homework.

At the second treatment session homework was reviewed and, in addition to paced breathing, patients were instructed to practise overbreathing, substituting the controlled pace. It was emphasised that controlling breathing would help them to control their symptoms and should be applied during exposure or when anxious. For those patients identified as 'non-hyperventilators', the breathing training took the same form, but with the rationale that controlled breathing was a universal and important component of relaxation and control of anxiety.

### *Placebo treatment*

At the first treatment session, patients were given information about the physical symptoms of anxiety and their origin in terms of the 'fight-or-flight' response (no mention being made of hyperventilation). Emphasis was placed on the role of stress, arousal, and personality in precipitating and maintaining anxiety states. It was explained that this made it important for the patient to identify any such areas in their background which might be relevant. The patient was then invited to explore these with the therapist, allowing free association of ideas, without the therapist giving guidance or suggesting any solutions or anxiety management techniques. As homework the patient was instructed to spend half an hour each day writing in a diary about issues, events or ideas which seemed relevant to him. This was continued at the second session, the homework often forming the basis of further discussion.

### *Comparison of treatments*

In order to assess the degree to which each treatment rationale was accepted by patients, they were asked to rate, at the end of the first treatment session, its apparent suitability for them and their expectations of improvement (this was done using two nine-point scales, anchored at 0 by either 'not at all suitable' or 'no improvement at all', and at 8 by either 'entirely suitable' or 'complete recovery'). These two scores were summed to give the composite 'expectation of treatment' score shown in Table I. There were no significant differences between the two treatment groups or between the hyperventilators and non-hyperventilators.

### *Treatment sessions three to five*

Phobic patients in both treatment and placebo groups were instructed in the principles of graded *in vivo* exposure and exposure homework was planned. Those practising respiratory control continued their breathing exercise homework and were instructed to use the controlled breathing during exposure practice as a means of controlling symptoms. The rationale for introducing exposure was that their fears had been strengthened by avoidance of feared situations and that confronting these situations while tolerating and managing their emotional reaction would lead to an eventual reduction in anxiety. The fourth and fifth sessions, spread over three weeks, continued the exposure treatment.

For non-phobic patients, for whom exposure was not appropriate, other anxiety management techniques were introduced as appropriate. These most often consisted of methods of distraction from anxiety symptoms and of talking to themselves in a reassuring manner. These conventional anxiety management strategies were introduced without specifically using cognitive therapy. Blind assessment after treatment followed three weeks after the fifth session and included both observer ratings and self-ratings.

### **Purpose of design**

This design allows three questions to be asked. (a) Is respiratory control alone an effective treatment? (b) Does training in respiratory control potentiate conventional treatment in patients with panic attacks? (c) Do hyperventilators respond to the treatment better than non-hyperventilators?

### **Statistical analysis**

Analyses of covariance (BMDP, Dixon *et al*, 1981) are presented using pretreatment scores as the covariate with two factors: respiratory control/placebo treatment and hyperventilator/non-hyperventilator status. Between-group differences at initial assessment and at the end of the baseline period were assessed using *t*-tests.

## Results

Table I gives the characteristics of the population, subdivided into treatment groups and into hyperventilators and non-hyperventilators. There were no significant differences between the two treatment groups in the variables presented. Given the use of exposure treatment when appropriate, it should be noted that the distribution of phobic patients between the two groups is similar.

Of the 30 patients (75%) who were identified as phobic, the diagnoses were: agoraphobia (23), social phobia (6) and driving phobia (1). The criteria for phobic anxiety were that certain situations consistently precipitated anxiety and that most panic attacks occurred in these situations. Phobic patients could also identify situations in which panic attacks did not occur. Non-phobic patients could not identify any situations which were consistently associated with anxiety and there was no situation in which they felt panic attacks would not occur.

### **Treatment outcome**

Data were analysed with the patients subdivided by treatment group and by hyperventilator/non-hyperventilator status. At initial assessment there were no significant differences between these groups. Outcome data have been divided into observer and self-ratings. (Means and standard deviations for the data below can be obtained from GH.)

### *Observer ratings*

The analysis of covariance of Hamilton anxiety scores showed a significantly better outcome for the whole group who practised respiratory control than for the group who received placebo treatment ($F(1,35)=5.01$, $P<0.05$). Hyperventilators did not benefit significantly more from the respiratory control training than non-hyperventilators ($F(1,35)=1.3$, $P>0.1$). The global anxiety scores did not show any differences in outcome.

### *Self-ratings*

Both treatment groups and hyperventilator/non-hyperventilator groups showed stable pretreatment baselines on all self-report measures. Analyses of covariance of each measure showed no differences between treatment groups

TABLE I
*Characteristics of treatment groups*

| | *Respiratory control* | | | *Placebo* | | |
|---|---|---|---|---|---|---|
| | *All patients* | *Hyper-ventilators* | *Non-hyperventilators* | *All patients* | *Hyper-ventilators* | *Non-hyperventilators* |
| No. in group | 21 | 13 | 8 | 19 | 11 | 8 |
| No. of each sex | | | | | | |
| Female | 13 | 9 | 4 | 13 | 9 | 4 |
| Male | 8 | 4 | 4 | 6 | 2 | 4 |
| Age: years | | | | | | |
| Mean | 35 | 34.4 | 36.1 | 35 | 33.6 | 36 |
| Range | 15–58 | 15–58 | 22–58 | 18–56 | 21–55 | 18–56 |
| Median | 35 | 35 | 34 | 34 | 34 | 35 |
| Time since onset of symptoms: years | | | | | | |
| Mean | 2.6 | 2.7 | 2.5 | 3.9 | 3.8 | 3.9 |
| Range | 0.3–10 | 0.5–10 | 0.3–7 | 0.3–15 | 0.3–15 | 0.8–13 |
| Median | 2 | 1.5 | 2 | 2 | 1.5 | 2 |
| No. of phobic patients in each group | 16 | 10 | 6 | 14 | 10 | 4 |
| Expectation of treatment (0–16) | | | | | | |
| Mean | 11.1 | 12.1 | 9.5 | 9.3 | 9.8 | 8.6 |
| Range | 4–16 | 4–16 | 6–12 | 4–14 | 4–14 | 6–11 |

either before the introduction of additional treatments or at final assessment, nor did they show any difference in outcome between hyperventilators and non-hyperventilators.

The presence of phobic avoidance was not related to outcome.

All groups showed significant improvement by the final assessment in all self-report measures, including panic attack frequency and symptom severity, by which time all had received either exposure or anxiety management training.

## Discussion

Observer ratings indicated a significantly better outcome for the group who practised respiratory control (plus other measures) compared with the group receiving placebo treatment (plus other measures). However, after the three weeks in which the treatments had been given and before the introduction of other methods common to both groups, only self-report measures were obtained. None of these self-report measures produced significant differences at that stage. Nor did the self-report measures show differences at the final assessment. It is therefore impossible to draw unequivocal conclusions. The difference in the main observer rating at the final assessment does, however, suggest that the combination of breathing training and other treatment methods is more effective than the other treatment methods alone.

There is no evidence that hyperventilators gained more from the combination of respiratory control with other treatment measures than non-hyperventilators.

The significant benefit seen in the treatment group was not due to a disproportionate number of phobic patients, who would have benefited particularly from exposure treatment. The patient groups were of similar composition in this respect and diagnostic group was not related to outcome.

The difference in treatment outcome shown by the observer ratings is not reflected in the self-ratings. This may be because the observer ratings were not sufficiently blind. We do not believe this to be the case. Care was taken to ensure that the observer ratings were completed at the start of the final assessment in order to avoid discussion that gave clues to the patient's treatment condition. Alternatively, self-ratings may have been affected by patients' expectations of treatment. The placebo procedure was well accepted by patients, as indicated by their 'expectation-of-treatment' scores. As a result they may have felt and reported a subjective benefit without a corresponding objective change in their condition. The brief period of treatment being studied would tend to exaggerate such an effect.

Although the observed treatment effect achieved significance, the degree of change is only modest. It must be pointed out that the final assessment did not mark the end of treatment, which continued as necessary, but was the point for comparing the two treatments. A comparison of the magnitude of change, in comparable measures (frequency of panic attack, fear questionnaire avoidance and dysphoria, Beck Depression Inventory) with the Clark *et al* (1985) study, shows our treatment effect with respiratory control to have been about half that of the previous study, both before (at two weeks) and after (at six weeks) the introduction of additional treatments. Therefore, although we have demonstrated that a brief, pure form of respiratory training is a useful but non-specific addition to conventional treatments, these data support the view that the cognitive content that we excluded is important.

The observation that hyperventilators did not benefit more than non-hyperventilators differs from the finding of Salkovskis *et al* (1986). Using the same respiratory control training with the cognitive therapy of Clark *et al* (1985), they found that the more patients perceived the effects of overbreathing as similar to their panic attacks, the better their response to treatment. This, again supports the view that the cognitive content is effective, whereas respiratory training in a pure form adds only modestly to the effects of conventional treatment and is not specific to those positive on the provocation test. A non-specific effect would be consistent with evidence from healthy volunteers that slowed breathing can reduce arousal in anxiety-provoking situations (McCaul *et al*, 1979; Cappo & Holmes, 1984). It is also consistent with the widespread use of controlled breathing in relaxation exercises, yoga and meditation (Brena, 1971; Michaels *et al*, 1976).

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# Psychosocial Status of 192 Out-Patients with HIV Infection and AIDS

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One hundred and ninety-two out-patients with HIV infection were interviewed in a standardised manner at two London hospitals. Almost all had revealed their diagnosis to others, one-quarter receiving negative reactions from confidants. Thirty-one per cent had significant psychiatric problems, almost half of whom reported emotional problems before HIV infection. Twenty-two per cent complained of difficulties with memory or concentration, of whom 12.5% had objective cognitive impairment on brief assessment. Excessive health ruminations were an important indicator of more extensive psychological problems. This degree of psychological distress is in keeping with reports for patients with other medical conditions, and overall, patients appeared to have adapted well, despite the obvious stigma and poor prognosis of their condition.

Before we can plan appropriate psychological services for patients infected with the human immunodeficiency virus (HIV), we need to study the immediate and long-term psychological consequences of the diagnosis. Although there have been helpful reviews (Deuchar, 1984; Nichols, 1985; Holland & Tross, 1985), case reports (Thomas *et al*, 1985; Thompson *et al*, 1986), and descriptions of problems seen in psychiatric consultations (Dilley *et al*, 1985; Buhrich & Cooper, 1987), and although practical guidelines have been published for the management of patients (Miller *et al*, 1986; McKusick, 1986), there have been few psychiatric assessments of a consecutive series of patients who do not present primarily with psychological complaints. The stigma of this disorder (Deuchar, 1984; Nichols, 1985), its bleak prognosis and the neurological involvement (Snider *et al*, 1983; Carne & Adler, 1986; Joffe *et al*, 1986; Grant *et al*, 1987; Brew *et al*, 1988) generate psychological difficulties for many patients.

Thus it was decided to investigate the psychological and social status of a consecutive series of out-patients with HIV infection using standardised instruments.

## Method

Out-patients with HIV infection attending clinics for sexually transmitted diseases (STD) at two London teaching hospitals were approached for interview. Both clinics had special sections for all patients identified as HIV positive who were followed up on a regular basis by a team of doctors, nurses and health advisers, all trained in the care of HIV patients. The study took place in these special HIV clinics. Patients were seen consecutively at one clinic, but at the second, and busier clinic, after each interview the next available attender was asked to take part. Subjects gave informed consent.

Interviews were all conducted by the author, and began with collection of demographic data. The Clinical Interview Schedule (CIS) a semistructured instrument widely used to assess psychiatric disorder in non-psychiatric patients (Goldberg *et al*, 1970), also incorporated questions concerning past medical and psychiatric history. A total score was generated from symptom ratings and abnormalities manifest at time of interview. In addition, an overall severity rating was made by the interviewer.

As this assessment formed one part of a larger study, there was insufficient time to undertake cognitive tests on every patient. However, subjects who made complaints of poor concentration or unusual forgetfulness, or in whom there were signs of apathy or mental slowness, were given simple tests – immediate and delayed recall of a name and address, subtraction of serial 7s from 100, and digit span forwards and backwards.

A further semistructured interview was used to elicit information on HIV (reasons for test, openness, reactions of others) and sexual history (orientation, openness, partners).

Finally, patients answered a questionnaire (obtainable from author) about their health worries, how well or unwell they felt and how this perceived level of health affected their daily activities. They also completed the 12-item General Health Questionnaire (GHQ) (Goldberg, 1972).

The study included an assessment of the relationship between HIV out-patients and their family doctor, which is reported in full elsewhere (King, 1988). Data were collected between April and September, 1987.

## Results

### Response rates and demography

Of the 206 patients approached, 192 (three women) agreed to interview. Mean age was 35 years and the majority were Caucasian and in social classes 1 and 2 (Goldthorpe & Hope, 1974).

### Diagnosis

Sixty-five patients were HIV positive but well, 64 had accompanying signs or symptoms (41 persistent generalised lymphadenopathy (PGL), 23 AIDS-related complex (ARC)) and 63 had the full syndrome of AIDS. Only 70 patients had originally attended either STD clinic specifically for the HIV antibody test and only 108 had had the test performed at the clinic they were then attending. The remainder had been referred, or had referred themselves, after being tested elsewhere, usually in the hospital housing the clinic, other hospitals, or other STD clinics.

### HIV testing without consent

Eight men, all homosexual, claimed to have been tested for HIV antibody without their knowledge or consent. All eight tests took place in 1985 and 1986. Three had had the test performed during investigation on medical wards, one before an orthopaedic surgical procedure, three in STD clinics and one by a general practitioner in private practice.

### Sexual orientation, sexual activity and intravenous drug use

Of the men, 183 were homosexual or bisexual, four heterosexual, one transsexual and one refused to say. Sixty-one subjects (all homosexual) had had more than 40 sexual partners over the five years before interview. Fifty subjects reported that they continued to have casual partners, most declaring that they observed the basic guidelines of 'safer sex'. Forty-two claimed to have no current sexual contact. The AIDS patients less often reported having casual sex and were more likely to be abstinent or in a stable partnership ($\chi^2 = 12.27$, d.f. = 2, $P < 0.02$).

Most homosexual men in the sample had been relatively open about their sexuality. Only two had never revealed their sexual orientation to anyone (except, by implication, to casual sexual partners). Forty-eight men claimed to have been discriminated against at some time in the past for their sexual preference. Only 45 could be specific about who had discriminated: principally employers, workmates, strangers in the street and the police. Many patients expressed some ambivalence about their sexuality since diagnosis, and the difficulties this had caused.

Eleven men and one woman had used drugs intravenously, only one of whom was a current user. Eight of these men were also homosexual.

### Openness about diagnosis to others

Although most subjects were sensitive to the stigma of HIV infection, only six had told no one of their diagnosis. People usually informed were sexual partners, close friends and, less often, the family (Table I). Fifty-five subjects claimed to have been rejected by at least one person who knew of their diagnosis, although only 49 could report specific examples (Table I). Although a minority of those informed reacted badly, rejection by employers and dentists was proportionately most common and was frequently harsh. Family members very rarely rejected patients.

TABLE I

*Openness about HIV diagnosis to others*

| | *No. of persons told of the HIV positive test* | *No. of persons rejecting or discriminating against patients* |
|---|---|---|
| Sexual partners | 126 | 8 |
| Close friends | 164 | 19 |
| Parents | 51 | 1 |
| Sibling(s) | 70 | 3 |
| Employer | 29 | 9 |
| Workmates | 38 | 3 |
| Dentist | 40 | 11 |

Note: this was a multiple-response question, thus number of replies exceeds number of respondents ($n = 192$).

Eighty-five subjects had approached counselling and advice organisations for assistance, principally the Terrence Higgins Trust, Body Positive and the London Lighthouse.

### Time since diagnosis

Mean time from diagnosis to study interview was 17.7 months. Over half of patients with ARC had known of their HIV infection for more than two years. The longer the time since diagnosis, the more likely patients were to have approached counselling organisations for help ($\chi^2 = 15.85$, d.f. = 4, $P < 0.004$), or to have been discriminated against because of HIV ($\chi^2 = 14.71$, d.f. = 4, $P < 0.006$).

### Health worries and effects on health

On the basis of their replies to four questions concerning the severity and frequency of health ruminations, as well as the frequency of self-examination, subjects were divided into frequent and infrequent worriers. Although frequent worriers more often rated themselves as feeling unwell (difference = 13%, 95% confidence interval = 1–25, $\chi^2$ (Yates') = 3.85, d.f. = 1, $P < 0.05$) they were no more likely to be impaired on the basis of daily activities than those who ruminated about their health much less often. In addition, the degree of worry was not correlated with type of HIV diagnosis, whether they had sought help from support organisations, time since diagnosis, or discrimination over HIV.

Subjects with ARC or AIDS felt quite or very unwell more often than HIV-positive or PGL patients ($\chi^2 = 16.96$, d.f. = 3, $P < 0.001$). However, ARC patients were less impaired in daily functioning than those with AIDS ($\chi^2 = 25.56$, d.f. = 3, $P < 0.0001$), resembling HIV-positive and PGL subjects in this respect.

### Psychiatric status

There were no significant differences in mean scores on the CIS or the GHQ between the four HIV diagnostic groups, although there was a trend for those with ARC to have the highest scores (Table II). Pearson correlations were

TABLE II
*Mean scores on CIS and GHQ*

| | *CIS* | *GHQ* |
|---|---|---|
| HIV-positive but well | 12.8 | 25.3 |
| PGL | 14.4 | 24.3 |
| ARC | 15.0 | 26.1 |
| AIDS | 14.5 | 25.3 |
| Whole group | 14.0 | 25.1 |

HIV+PGL *vs* ARC+AIDS, $t=0.92$, $F=190$ (not significant).
GHQ scored 1, 2, 3, 4.

performed between these psychiatric indicators and other parameters such as health worries (Table III). There were high correlations between CIS total scores, overall CIS severity ratings and GHQ scores, with lower correlations between psychiatric scores and perceived health. Rumination about health had lower correlations with all other indicators, but was most closely associated with total score on the CIS.

Sixty subjects had psychiatric disorder as defined by a CIS total score of greater than 18, an overall severity rating of 2 or more on the CIS, and/or an ICD–9 diagnosis (World Health Organization, 1978). (A score of greater than 18 correlated most closely with an overall severity rating of 2 on the CIS - Table IV.) Only five patients given an ICD–9 diagnosis received an overall severity rating on the CIS of less than 2 (Table V), and these were usually in categories, such as stable drug dependence, that were not causing active psychological problems. Psychiatric disorder, so defined, did not correlate with HIV diagnostic grouping, approaching organisations for assistance, or any discrimination as regards HIV or homosexuality. However, psychiatric disorder was more likely: where there was a past psychiatric history (see below), in those who worried frequently about their health (difference=24%, 95% confidence interval=9.5–38.5, $\chi^2$ (Yates')=9.0, d.f.=1, $P<0.003$), in those who felt very unwell (difference=55%, 95% confidence interval=41–69, $\chi^2$ (Yates')=14.06, d.f.=1, $P<0.0003$) and in those unable to work or socialise as well as usual (difference=25%, 95% confidence interval=6.6–43.4, $\chi^2$ (Yates')=5.64, d.f.=1, $P<0.02$). There was also a trend for those with psychiatric problems to have known of their HIV diagnosis for 12 months or less.

TABLE III
*Principal Pearson correlation coefficients for psychiatric and health indicators*

| *Parameters* | *Correlation coefficients* |
|---|---|
| Total score on CIS/CIS overall severity rating | 0.83 |
| Total score on CIS/GHQ | 0.70 |
| Total score on CIS/Health score | 0.59 |
| GHQ/health score | 0.53 |
| GHQ/CIS overall severity rating | 0.60 |
| Health score/effects score | 0.65 |
| Health score/CIS overall severity rating | 0.53 |
| Worry score/total score on CIS | 0.42 |

Health score = perceived health state.
Effects score = effect of current health on daily living.
Worry score = frequency/severity of health ruminations.

TABLE IV
*CIS score (cutoff 18/19) against overall severity rating*

| | *Overall severity rating (CIS)* | | | | |
|---|---|---|---|---|---|
| | *0* | *1* | *2* | *3* | *4* |
| CIS total score | | | | | |
| ≤18 | 79 | 45 | 8 | – | – |
| >18 | – | 8 | 40 | 11 | 1 |

Overall severity rating (CIS): 0, no psychiatric disorder; 1, occasional symptoms, no psychiatric disorder; 2, disorder at a level managed by a primary physician; 3, disorder of sufficient severity for referral to a psychiatric out-patient department; 4, disorder of sufficient severity for admission.

The majority of ICD–9 diagnoses (Table V) were adjustment reactions, neurotic depression or neurotic anxiety. Although there were no psychotic disorders, one man was already under psychiatric care, could not be assessed adequately in the study interview, and appeared to have a major psychiatric illness.

Of those eight men tested without their knowledge, three had been severely distressed by the lack of prior warning or consent, and still suffered such psychiatric disorder at interview. The remainder were unaffected psychologically at the time of the study, although only one reported that he had appreciated knowing his HIV status.

### Past psychiatric history

Sixty-seven patients gave a history of 'nervous trouble' before the diagnosis of HIV, of whom 36 had undergone psychiatric treatment. Patients were more likely to suffer psychiatric disorder at the time of interview if they reported a past history of nervous trouble (difference=21%, 95%

TABLE V
*ICD–9 diagnosis versus overall severity rating (CIS)* (n=60)

| *ICD diagnosis* | *CIS severity rating* | | |
|---|---|---|---|
| | *0–1* | *2* | *3–4* |
| Prolonged depressive reaction (309.1) | – | 13 | 3 |
| Adjustment reaction – mixed (309.2) | 1 | 17 | 1 |
| Neurotic depression (300.4) | – | 7 | 5 |
| Anxiety state (300.0) | – | 5 | – |
| Alcohol dependence (303.0) | 2 | 1 | 1 |
| Drug dependence (304.0) | 1 | – | – |
| Paranoid personality disorder (301.0) | – | – | 1 |
| Transsexualism (302.5) | 1 | – | – |
| Unspecified | – | – | 1 |

confidence interval = 7.3–34.7, $\chi^2$ (Yates') = 7.82, d.f. = 1, $P < 0.006$), or of psychiatric treatment (difference = 16%, 95% confidence interval = 4–28, $\chi^2$ (Yates') = 6.22, d.f. = 1, $P < 0.02$).

### Cognitive impairment

Forty-three patients were given brief cognitive tests as outlined earlier and 24 were found to have impairment. Impairment was most commonly seen in serial-7 calculations and consisted of extreme slowness, inaccuracy or failure to complete the task. All 24 could not perform serial 7s correctly. In addition, 14 had poor immediate and/or delayed recall of a name and address and 22 were unable to reproduce more than six digits forwards or four backwards. These tests were assessed in the light of each patient's educational and employment background. However, because of lack of specific information on previous cognitive functioning and because of the brief nature of the tests, only gross impairment could reliably be detected. Thus, more subtle forms of cognitive dysfunction in the remaining 19 could not be ruled out.

Of those tested, patients with PGL, ARC or AIDS were much more likely to have cognitive impairment than those with asymptomatic HIV infection (difference = 53%, 95% confidence interval = 16–90, $\chi^2$ (Yates') = 5.61, d.f. = 1, $P < 0.02$). However, cognitive impairment was not related to feelings of well-being, effects of current health on daily functioning or worries about health. Nor was there any difference in the distribution of psychiatric disorder between subjects with cognitive impairment, those tested but with no detectable impairment, and the remainder who were not tested.

## Discussion

Consistent with reports for Europe and North America (Brettle *et al*, 1987; Dunea, 1987), the majority of HIV patients in this unselected series were homosexual or bisexual men. Although it is of some concern that over one-quarter of patients reported continued involvement in casual sex, subjects claimed to follow the guidelines of 'safer' sex, avoiding exchange of body fluids. This is consistent with reported changes in lifestyle of homosexual populations in the UK (Bradbeer, 1987) and the US (Winkelstein *et al*, 1987).

Almost all patients had revealed their diagnosis to others, in a quarter of cases at considerable emotional and social cost to themselves by way of condemnation or outright rejection. Negative reactions by close confidants occurred most often; however, patients who revealed their diagnosis to employers or dentists were also at risk of negative consequences. One-third of employers who were informed took little cognisance of published guidelines for employees with HIV (Green, 1987).

Testing for HIV without the patient's knowledge or consent was reported by 4% of this sample and was unacceptable to almost all of them. Lack of regard for informed consent, and with it the lost opportunity for counselling before testing, may have also resulted in more severe psychological reactions.

At interview, 31% of patients were rated as psychiatrically disordered. While in absolute terms this appears to be a considerable level of psychiatric morbidity, it is similar to or even less than that reported in other unselected series of patients in general practice (Boardman, 1987), in other STD clinics (Pedder & Goldberg, 1970; Catalan *et al*, 1981), on hospital wards (MacGuire *et al*, 1974; Bridges & Goldberg, 1984), or undergoing investigation for malignancy (Davies *et al*, 1986), where the CIS and/or GHQ have also been used. Almost one-half of those with psychiatric problems at interview reported emotional problems *before* the diagnosis of HIV infection, making previous psychological health the most important risk factor for how patients were coping with the diagnosis. It is vital that mental health professionals take this into account in predicting who among their clients may need greater support.

The majority of disorders were reactive in nature but were no more prevalent at any stage in the HIV disorder. There were no links between rejection or discrimination as an 'AIDS patient' and psychological disorder. However, there were trends for higher mean psychiatric scores in patients with ARC and for all patients in the first 12 months after diagnosis. The diagnostic uncertainty for ARC patients has been highlighted previously (Miller, 1987); several patients described the emotional relief of the appearance of unequivocal AIDS, and with it the easing of uncertainty. It is also understandable that the distress of the diagnosis is likely to be most severe soon after diagnosis.

Although 44% of patients had sought help from counselling and advice organisations, many more reported extensive networks of homosexual friends from whom they received considerable support. Several patients were involved in counselling organisations for people with HIV. The overwhelming impression, clinically, was that most subjects had adapted surprisingly well, in most cases without significant denial or ignorance concerning the likely prognosis. The common themes that emerged echoed those reported from other studies (Deuchar, 1984; Dilley *et al*, 1985; Miller & Green, 1985; Ostrow *et al*, 1986), namely: uncertainty about prognosis, fear of the reactions of others, dealing with the likelihood of a premature death, and guilt over previous lifestyle. Despite this, most were determined to maintain themselves physically and socially and to increase their understanding of the illness.

Psychiatric disorder was associated with frequent health worries but not with the effect of health status on daily living. Thus health worries, together with subjective feelings of ill health, appeared to be associated more closely with psychiatric symptoms than with any objective impairment of daily living. Ostrow *et al* (1986), in a report stemming from the multicentre AIDS cohort study in the US, also confirmed the importance of perceived health status on psychological and possibly immune functioning. Excessive health ruminations in patients with HIV infection may be an indicator of more extensive psychological disturbance, rather than simply an 'understandable' consequence of knowledge about the diagnosis.

Although cognitive testing was limited by the nature of the study, 24 subjects showed objective handicap. There may be several reasons why cognitive impairment was less apparent here than would be expected from the known neurotropism of the HIV (Carne & Adler, 1986) or from that reported in other series (Snider *et al*, 1983; Grant *et al*, 1987). Cognitive manifestations of involvement of the central nervous system may have been too subtle to be detected in a single, brief assessment, only one-third of the sample had fully developed AIDS, and patients were perhaps less severely ill in being ambulant out-patients. Patients who reported difficulties with concentration or memory were no more likely to suffer psychiatric problems, whether or not they showed cognitive impairment on testing. Thus, cognitive impairment and psychiatric disorder were not easily confused, as has been suggested in case reports (Hoffman, 1984).

It can be concluded that in this unselected group of patients with HIV infection, psychiatric disorder was no more common than among patients in other medical settings and was closely associated with past psychiatric health. Most were in the higher social classes and may have been sheltered to some extent against the social rigours of a debilitating illness. Despite the stigma of this disorder, experienced overtly by at least one-quarter of this group, and despite its dismal prognosis, patients appeared to have adapted by making use of counselling bodies, hospital health advisers or their own network of friends. The success of counselling and support organisations for HIV patients might serve as a model for care of patients suffering from other debilitating, terminal disorders.

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# Suicide Among Chinese Schizophrenics in Hong Kong

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A descriptive study of suicides in 74 Chinese schizophrenic out-patients (43 male) is presented. The mean age at death was 31.3 years. The mean duration of illness was 8.5 years and 50 of the 74 died within ten years of onset of illness. Only five lived alone; 35 were openly employed and 20 were married at the time of death. Twenty had a history of depression, and 27 had attempted suicide previously. More females had been depressed or had attempted suicide than males. Over half were last admitted for reasons other than schizophrenic symptoms alone and ten died within one month of discharge. Eight of 71 patients followed up expressed suicidal ideas at the last psychiatric contact, but only 15 were symptomatic. Jumping was the commonest method used. Analytical studies are needed to identify risk factors in Chinese schizophrenics.

The risk of suicide among schizophrenic patients is well documented in Western societies (Miles, 1977). In Hong Kong, the long-term follow-up study of Chinese schizophrenics by Lo & Lo (1977) found three definite suicides out of four deaths in 146 schizophrenics followed up for ten years. This suggests that suicide is probably as important a cause of death among the Chinese schizophrenics as it is elsewhere.

A case-control study on 23 schizophrenic suicides and 23 non-suicidal schizophrenics in Hong Kong has been briefly reported (Law, 1986). Mental relapse in the last three months was more frequently found among the male suicides than their controls, but the author found no other significant difference. Few details on the features of the suicide cases were reported. As suicide among Chinese schizophrenics has never been properly described, a detailed description is warranted as a logical step in epidemiology, before an analytical study can be performed to elucidate the differential roles of various risk factors. The present study therefore aimed to characterise the sociodemographic and psychiatric features of a large series in Hong Kong of Chinese schizophrenics who committed suicide.

## Method

In 1981, the population of Hong Kong Island was 1 184 000, of whom 98% were Chinese (Census and Statistics Department, 1981). Although accurate data on the distribution of patients being looked after in the private and public sectors are not available, we believe that the cost of medical care of chronic schizophrenics by private psychiatrists may be prohibitive for most patients, so that the majority of them are probably under the care of the Government Mental Health Service. The Service operates two out-patient clinics on Hong Kong Island, where the present descriptive study was carried out. The records of all patients who were registered in the two clinics and who committed suicide between 1981 and 1985 were scrutinised. On applying DSM–III (American Psychiatric Association, 1980) criteria retrospectively by one of us (C.M.L.), 74 suicide patients with chronic or subchronic schizophrenia were identified. All available records and charts of these patients were then examined and data extracted.

Sociodemographic and psychiatric variables were studied and comparison was made between the male and the female suicides whenever appropriate.

## Results

All 74 schizophrenic suicides in the present series were of Chinese origin and were out-patients at the time of death. There were 43 males and 31 females. The mean (±s.d.) age at death was 31.3 (±9.1) years. The females died at a slightly earlier age (30.1 years) than the males (32.1 years) but the difference was not statistically significant ($t=0.96$, $P=0.34$). The methods of suicide are given in Table I, along with the sociodemographic characteristics of the subjects.

### Psychiatric variables

*Family history of mental illness*

Eight of the 74 patients had a first-degree relative with a history of mental illness. Among these relatives, four were known schizophrenics. History of suicide was found in a first-degree relative of only one of the 74 patients.

*Onset, duration and course of illness*

The mean (±s.d.) age at onset of illness of the 74 patients was 22.4 (±5.6) years, and was similar for the sexes. The mean (±s.d.) age at presentation was 24.1±6.0 years and the mean (±s.d.) interval from onset to presentation was 1.6±2.4 years. The duration of illness had a mean (±s.d.)

TABLE I
*Methods of suicide and sociodemographic variables*

| | *Male* (n=*43)* | *Female* (n=*31)* | *Total* (n=*74)* |
|---|---|---|---|
| *Methods of suicide* | | | |
| Jumping from a height | 29 | 23 | 52 |
| Hanging | 10 | 2 | 12 |
| Drowning[1] | 1 | 5 | 6 |
| Drug overdose and poisoning | 2 | 1 | 3 |
| Setting fire | 1 | 0 | 1 |
| *Sociodemographic variables* | | | |
| Born outside Hong Kong | 19 | 8 | 27 |
| Educated to secondary level or above | 21 | 14 | 35 |
| Openly employed | 23 | 12 | 35 |
| Married at the time of death[1] | 7 | 13 | 20 |
| Lived alone | 4 | 1 | 5 |

1. Differences between males and females significant at $P<0.05$ by $\chi^2$ or Fisher's exact test. No other significant differences were found between the sexes.

of 8.5 ± 5.8 years. Twenty-eight and 50 of the subjects had a duration of illness shorter than five and ten years respectively, with no significant difference between the sexes.

### *Admission history*

Fifty-five patients had been admitted at least once to a psychiatric ward. The proportion was higher in the males (79.1%) than in the females (67.7%), but the difference did not reach a significant level ($\chi^2=0.69$, d.f. = 1, $P>0.4$). Among those who had been admitted, the mean (±s.d.) number of admissions was 2.7 (±2.1). There was no sex difference.

*Last admission.* Of the 55 patients who had history of admission, 25 were last admitted for schizophrenic symptoms alone, and 17 for schizophrenic symptoms plus a depressive episode and/or suicidal ideas or attempts. Eight had exhibited violent acts against other persons or objects before being admitted. Five were admitted through hospital orders after committing criminal acts: two of them attempted robbery, one stowed away in an oceanliner, one indecently assaulted a minor and one was arrested for indecent exposure.

Among those who had been admitted, six died within one week of the last discharge; ten within one month, 12 within two months, 19 within six months and 26 within one year.

### *Previous depressive episodes and suicidal attempts*

Twenty patients had history of at least one episode of depression meeting DSM-III criteria for major depressive episode in the last five years. There were more women (45.2%) who had been depressed than men (14.0%) ($\chi^2=7.38$, d.f. = 1, $P<0.01$).

Twenty-seven patients had attempted suicide in the past: 18 females compared with nine males ($\chi^2=9.18$, d.f. = 1, $P<0.01$). Among these 27 patients, the mean (±s.d.) number of previous attempts was 1.7 (±1.0). Significantly more of those who had history of depressive episode had attempted suicide (75.0%) than those who had not been depressed (22.2%) ($\chi^2=15.34$, d.f. = 1, $P<0.001$). One patient died within two months of the last unsuccessful attempt, five between two and six months, six between six and 12 months, two between one and two years, nine between two and five years and four after more than five years. The mean (±s.d.) was 3.3 (±4.3) years from the last attempt and the median was 2.0 years.

### *Last psychiatric contact*

Among the 74 patients, three had defaulted follow-up at the two clinics for over six months preceding their deaths. Of the other 71 patients, 34 had been seen by their psychiatrist in the week preceding their deaths. Psychotic symptoms, depressive mood or suicidal ideation were found in 15. Eight expressed suicidal ideas.

All patients were requested to attend further follow-up, and the mean appointment date from the last contact was 4.3 weeks.

### *Life events that precipitated suicide*

Stressful life events that might have contributed to the suicides of the patients were recorded in nine patients. These included employment problems in two cases, one of whom was fired from work on the day of death. One was worried about the imminent demolition of his squatter hut. A man was rejected marriage by his cousin and another had a row with his girlfriend. One patient who had a criminal record killed himself shortly after being arrested for suspected homicide. A woman went into puerperal relapse and committed suicide. Another pregnant woman had frequent rows with her husband and in-laws. A girl took her own life soon after a close friend committed suicide.

No definite evidence was found in any of the suicides that the act was performed under hallucinatory experience.

## Discussion

Little is known about the Chinese schizophrenics who commit suicide. Most of the descriptive and controlled studies that had been conducted in other societies included relatively small numbers of cases and the diagnostic criteria were not specified in many of them (Drake *et al*, 1985). The present study describes 74 Chinese patients who committed suicide and who met DSM-III criteria for chronic or subchronic schizophrenia. To the best of our knowledge, this is one of the largest series of schizophrenic suicides ever reported in the literature.

The proportion of males in this study is low when compared with most other studies (Warnes, 1968; Roy, 1982). However, in the case-control study by Law (1986) in Hong Kong, there were 13 males among 23 schizophrenic suicide cases, giving a sex ratio similar to ours. Studies of suicides in the general population of Hong Kong also yielded sex ratios which were lower than those found in Western populations (Yap, 1958; Lo & Leung, 1985).

The mean age at death of our subjects was 31.3 years, which was older than the 25.8 years found by Roy (1982), who also used DSM-III diagnostic criteria. Whereas other researchers (Drake *et al*, 1985) had reported that males died at a slightly earlier age than females, the reverse was found in the present series, although the difference was not significant. In the present series, the mean duration of illness (8.5 years) was similar to that reported by Breier & Astrachan (1984), but longer than that reported by Roy (1982). Twenty-eight of the suicides occurred within five years after illness began and 50 of the subjects died within ten years of onset. Together with the impression that many young persons with incipient schizophrenia actually kill themselves before they present to psychiatrists, the notion that suicides occur predominantly in the early stage of the illness is probably true also of Chinese schizophrenics.

A number of studies on suicide among both the general population and the mentally ill showed that most subjects were socially isolated (Barraclough *et al*, 1974; Roy, 1982). In the present study, however, only five of the subjects were living alone at the time of death, and most of the others were living with close relatives. This is not surprising in view of housing provision in Hong Kong, which is one of the most densely populated places in the world, and few can afford to live alone. In 1981, only 3.8% of the general population were living alone (Census and Statistics Department, 1981) and the difference between this figure and the one we found among our subjects did not reach a significant level. About half of the subjects in the present study were employed, and this is a greater proportion than Roy (1982) found among his patients in Toronto. Similarly, the proportion of our subjects who were married (27%) was higher than in other reports (Roy, 1982; Breier & Astrachan, 1984). This can be explained by the fact that there were relatively more females in our series, and that more female than male schizophrenics are married.

Twenty of our subjects had at least one major depressive episode in the last five years. This confirms the previously reported finding that depression occurred in a considerable proportion of chronic schizophrenics who committed suicide (Roy, 1982; Drake *et al*, 1986; Drake & Cotton, 1986). However, this finding may be difficult to interpret without a control group, since it is well documented in other populations that depression is common even among non-suicidal schizophrenics (Hirsch, 1982; Scottish Schizophrenia Research Group, 1987). Furthermore, as it has been demonstrated that suicide is associated with specific clinical features of depression (Drake *et al*, 1986; Drake & Cotton, 1986), this aspect needs to be further looked into among the Chinese schizophrenics.

Over one-third of subjects had attempted suicide. The proportion was again higher in females. Although the mean interval from the last unsuccessful attempt to death was fairly long (3.3 years), 44.4% of those who had such a history died in the year after an unsuccessful attempt.

Schizophrenic symptoms alone accounted for less than one-half of the last admissions. Most of the others were admitted for a combination of reasons, among which schizophrenic symptoms plus a depressive episode and suicidal ideation was most commonly encountered. This is compatible with the finding of Roy (1982), that those chronic schizophrenic patients who had been admitted because of depression or suicidal impulses were at particular risk for subsequent suicide.

This study agrees with previous reports that many psychiatric patients killed themselves soon after discharge from hospital (Temoche *et al*, 1964; Pokorny & Kaplan, 1976; Roy, 1982), although our patients seemed to die slightly later than those reported in Roy's (1982) series.

When last seen by their psychiatrists, about 80% of subjects were in apparent remission. However, eight patients expressed suicidal ideas in the last two consultations. Six were judged to be depressed and nine patients were taking antidepressants. It should also be noted that 34 subjects had their last psychiatric contact within the week preceding their deaths. The difficulty in predicting suicide among schizophrenics is therefore evident.

While recognising the inadequacy of speculation on the significance of any precipitating causes leading to suicide, we found that many subjects did kill themselves in the face of obviously stressful life events. This, of course, does not automatically mean that such events are risk factors for suicide among schizophrenics, as it has been reported that suicide subjects experience losses as frequently as their controls (Shaffer *et al*, 1974). Whether this finding also applies to Chinese schizophrenics is unknown.

Several studies have found that some schizophrenics commit suicide under the influence of auditory hallucinations (Roy, 1982). As such information is understandably difficult to ascertain or disprove, we have no definite evidence that this was the case in any of the subjects in this study.

Most of our subjects used suicide methods which were classified as highly lethal by Tuckman & Youngman (1968). Similar to findings among suicides in the general population in Hong Kong (Lo & Leung, 1985) and Singapore (Chia, 1981), jumping was the most frequently used method we encountered. As the choice of suicide method is well known to be dependent on availability, this finding can be explained by the large number of high-rise buildings in Hong Kong.

This study should provide a basis for further investigation. While there were a number of similarities between our subjects and patients of other populations, some interesting differences were also encountered. However, it is recognised that what we found may be typical of the schizophrenic in general, rather than specific to suicide patients. Further analytical studies are indicated to assess the roles of various features as risk factors for suicide. We are currently conducting a case-control study in order to formulate preventive measures on a more accurate and rational basis.

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# Hospital Suicides: Are There Preventable Factors?

## Profile of the Psychiatric Hospital Suicide

SENG ENG GOH, PAULA H. SALMONS and R. M. WHITTINGTON

The coroner's and hospital records of 57 consecutive in-patient or day-patient suicides were examined. There was a preponderance of males, but no difference between the sexes in violent deaths. The patients were generally chronically ill, and risk of suicide continued indefinitely after diagnosis. Risk was recorded in the medical notes for 16 patients and in the nursing notes for 12, but only six were under special observation. Half the patients were thought to be improving at the time of death. Psychiatrists and coroners should pay attention to aspects such as nursing and environmental factors in suicides in order to identify those at risk.

The suicide of an in-patient is a comparatively rare event. Gale *et al* (1980) estimated an incidence of 1.3–2.5 per 1000 discharges for six mental hospitals in New York City, and an estimate for suicides from one unit in Birmingham (UK) gave a figure of 1.7 (Salmons, 1984). For any one individual psychiatrist, therefore, experience of suicide of his/her own patients is likely to be limited, so that particular risks cannot be easily identified. Some investigators have drawn attention to particular groups of patients who are at special risk, for instance the male depressive during the first week in hospital (Copas & Robin, 1982).

Many UK studies of suicides of in-patients have been limited to single hospitals (Salmons, 1984; Sims & O'Brien, 1979). Clearly, in any individual hospital there may be environmental or other factors which influence method and rate of suicide. Poor communication about risk between medical and nursing staff, change in staff, and ward layout have been suggested as risk factors, but confirmation from studies in a variety of settings is lacking.

We examined a group of suicides from a range of psychiatric hospitals where the inquests had been conducted consecutively by the same coroner.

In England and Wales, when it is believed that a person may have died a violent or unnatural death, a coroner is informed. Usually an autopsy is ordered. The cause of death is established, sometimes with the help of laboratory investigations and, if necessary, toxocological analysis. If the death is not natural, the coroner makes further inquiries, obtains statements and receives reports and documents. At the subsequent inquest, evidence is heard regarding who the deceased was, and when, where and how death occurred. Suicide, although not uncommon, cannot be assumed without strong corroborative evidence. Whatever the verdict, the coroner collects much detailed information about the circumstances of the death and this provides much of the basis of this paper.

## Method

A list of consecutive suicides recorded by the coroner for Birmingham (population one million), kept between 1977 and 1985, was used in the study. All those who were undischarged in-patients and day patients at the time of suicide were included in the study, giving a total of 57. Out-patients were not included.

All the reports submitted at the time of the inquest were examined, and demographic details, together with information about the patient's illness, treatment, place and method of suicide were recorded. The hospital records, available in all but one case, were examined to ascertain whether or not suicidal risk was recorded in medical and nursing notes.

The current primary and secondary diagnoses were categorised as: schizophrenia, affective disorder, personality disorder, neurosis, and alcohol or drug addiction, or organic state. Details were recorded of previous episodes of self-harm and their seriousness in terms of intent and risk, both as written in the notes and as evaluated by ourselves.

A long-stay patient was defined as one who had been an in-patient for one year or more. Discharge was recorded as 'resisted' where there was clear evidence from the notes that the patient objected, or expressed thoughts or threats of self-harm if he or she were to be discharged.

## Results

The results are summarised in Table I. Three patients had communicated suicidal intent in the two weeks before death, 31 had suicidal thoughts and the reason for admission in seven was given as suicidal ideation. Sixteen patients had risk recorded in the medical notes, but in four of these patients risk was not mentioned in the nursing notes and only six were on special or close observation.

TABLE I
*Summary of results*

| | *No. of females (n=23)* | *No. of males (n=34)* |
|---|---|---|
| Demographic data | | |
| Single | 6 | 19* |
| Married | 12 | 11* |
| Divorced | 0 | 1 |
| Widowed | 4 | 1 |
| Separated | 1 | 2 |
| Social class* | | |
| I, II | 3 | 5 |
| III | 9 | 3 |
| IV, V | 10 | 18 |
| Unknown | 1 | 8 |
| Age at death: years | | |
| 15–24 | 4 | 7 |
| 25–34 | 2 | 8 |
| 35–44 | 4 | 8 |
| 45–54 | 4 | 4 |
| 55–64 | 5 | 4 |
| 65–74 | 4 | 3 |
| Employment status | | |
| In work | 1 | 0 |
| Unemployed | 4 | 25** |
| Off sick | 0 | 4 |
| House wife/retired | 13 | 1 |
| Unknown | 5 | 4 |
| Primary diagnosis | | |
| Schizophrenia | 8 | 19 |
| Affective disorder | 12 | 10 |
| Personality disorder | 3 | 1 |
| Alcoholism | 0 | 2 |
| Organic state | 0 | 2 |
| Length of illness: months | | |
| Up to 2 | 8 | 7 |
| 3–11 | 6 | 7 |
| 12 or more | 8 | 16 |
| Unclear | 1 | 4 |
| Length of last admission: months | | |
| Up to 2 | 14 | 15 |
| 3–11 | 7 | 10 |
| 12 or more | 0 | 8 |
| Unclear | 2 | 1 |
| No. of previous admissions | | |
| None | 2 | 5 |
| 1 | 5 | 8 |
| 2 | 3 | 7 |
| More than 3 | 12 | 14 |
| Unclear | 1 | 0 |
| No. of patients with a family history of: | | |
| suicide | 1 | 3 |
| mental illness | 7 | 12 |
| Status at time of death* | | |
| in-patients | 12 | 20 |
| in-patient on leave | 6 | 4 |
| day patient | 5 | 10 |
| Circumstances at death | | |
| improving at time | 13 | 10* |
| not improving | 12 | 17* |
| death by overdose | 4 | 7 |
| death by violence | 17 | 28* |
| death by other means | 1 | 0 |
| preparations or note | 9 | 7 |
| precautions against discovery | 4 | 0 |

*Differences not significant.
**$P<0.01$.

## Discussion

The preponderance of males in this study is consistent with other studies of psychiatric hospital suicides (Sletten *et al*, 1972; Rorsman, 1973; Hesso, 1977). There is only one significant difference between the sexes: males were more likely to be unemployed than females, although this may arise because a married unemployed woman is perhaps more likely to call herself a housewife. No significant difference was found between the sexes for violent deaths, a finding which agrees with other studies (Rabiner *et al*, 1982).

Many authors have drawn attention to the diagnosis and history of the illness in known suicides. The most frequent diagnosis appears to be schizophrenia or affective disorder, with the highest suicidal risk occurring early in the admission (Sletten *et al*, 1972; Rabiner *et al*, 1982; Black *et al*, 1985). In this study 49 out of the 57 carried these diagnoses. However, the patients reported here seem to be a much more chronically ill group than those previously described. Twenty-four had been ill for over a year and another eight had been in hospital for over one year. Nearly a half of all the patients had had more than three previous admissions. Sletten *et al* (1972) thought that the maximum period of suicide risk was in the first two years after the illness was diagnosed. While the majority of patients seem to conform to this pattern, the results of this study suggest that risk can continue for an indefinite period after diagnosis and that continuing awareness is necessary.

The findings suggest that psychiatrists should be prepared to enhance the level of observation where there is enough concern for risk to be reported in the notes, and that communications between medical and nursing staff could be improved. It is clear, though, that even patients on special or close observation may still kill themselves.

Over half of the suicides took place off the hospital site, and although observational facilities are clearly important in making sure that a patient at risk does not disappear from the ward, local layout does not seem to be of over-riding importance, provided it does not facilitate suicide. During the period of the study, changes in ward layout in some of the hospitals were made. For instance, one hospital's acute admission ward had five potential exits and the main nursing office gave no opportunity for patient observation, thus facilitating unauthorised departure of the patient. This was subsequently modified. Another unit on the sixth floor of a general hospital had been adapted for psychiatric use, being originally designed as staff residential quarters, with unsatisfactory layout for observation of patients (Salmons, 1984). It was not possible to tell what effects the changes had on the rates for suicide.

Some authors have suggested that variations in the ward environment because of staffing changes might be a factor in suicidal deaths. Salmons (1984) showed that many of the deaths in one unit were associated with periods at which there were lower levels of staffing than usual. In this investigation, it was not possible to identify such changes with any confidence from the hospital records.

Hesso (1977) drew attention to the apparent rise in suicide rates in Scandinavian hospitals after 1955. He suggested that mentally ill patients are more likely to be admitted than previously, and that there are more social pressures upon those who are seriously ill to conform and lead more 'normal' lives. He also thought that the use of neuroleptics and open-door policies led to shorter stays for those who were ill, perhaps increasing pressure in this way. Another factor he considered was the increased personnel turnover in psychiatric hospitals, leading to staff who were less experienced. No information was available in the present study about qualifications or experience of staff, although it seems clear that close observation of the high-risk patient is a task for skilled, knowledgeable, and experienced nursing staff. Rules about the degree of observation required must be simple, clear, and agreed by both nursing and medical staff.

Among the 27 patients with a diagnosis of schizophrenia in this study, there were six long-stay patients. Two of these patients had resisted discharge, which is of interest in the light of Hesso's (1977) suggestions, although the small numbers do not allow statistical analysis.

Twenty-three patients were considered to be improving at the time of death. Other investigators have also noted this trend, and it has been suggested that an apparent improvement in the patient's condition may be because the patient has resolved conflict by the decision to die. In any case, it seems clear that apparent improvement should not necessarily mean decreased vigilance.

The high-risk patient is one with a number of admissions, past attempts at self-harm and a family history of mental illness, and who has spent a long time in hospital. The patient is likely to carry a diagnosis of schizophrenia or affective disorder and may have verbalised suicidal thoughts and to have been admitted because of them. A sudden improvement in mental state needs to be carefully evaluated and the reasons for continued vigilance explained to all staff involved. In this study, there would seem to have been room for improvement in communication between medical and nursing staff.

There is now considerable information about which categories of patients are likely to be at high risk. Future research needs to be directed at the ward and hospital factors which are operative in allowing suicides to occur. Farberrow *et al* (1971) made recommendations with respect to treatment, training and physical environment, in order to predict and prevent suicides. Perhaps coroners could routinely request information about ward layout, nursing levels, the grade and experience of nurses assigned to special high-risk patients, and changes in staffing, so that these factors could be evaluated. Crammer (1984) has suggested an audit system; this could be modelled on that for maternal mortality in childbirth.

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***Point of View***

# Reflections on Psychotherapy with Ageing People, Individually and in Groups

A. JOAN G. HUNTER

Over the last 10 years I have run 17 psychotherapy groups for aged people who were in hospitals, homes or in the community. The groups were all short, usually running for 12 weeks. The total number in these groups was 121 and their ages ranged from 68 to 100. The average size of each group was seven and there were never more than four men in any group and in 11 groups there were only women. The average attendance was 88% and 36 attended more than one group. One member suffered from motor neuron disease, two from Parkinson's disease and the common causes of infirmity of old age were widely represented. All members had been diagnosed as suffering from senile dementia in two groups. In every group at least one member was hard of hearing and a communicator was used over the hearing aid to facilitate hearing. One member was blind and the sufferer from motor neuron disease continued to attend after losing her speech.

As far as I know, this type of person has not hitherto been thought of as meriting psychotherapeutic opportunity of this kind, although thinking in regard to individual treatment of the elderly has changed dramatically.

Freud (1904, 1905) did not consider that people in the second half of life could benefit from psychoanalysis, yet his colleague Abraham (1919) considered that the age at which the onset of neurosis occurred was more important than the age at which the patient started treatment. In Britain, Segal (1958) undertook 18 months of successful work with a 73-year-old man. She wrote, "This analysis has illuminated for me the problems of old age. Certainly it has altered my views on the prognosis of analysis at an advanced age." This view was shared by King (1974), and important contributions have been made by Sandler (1978, 1982).

In 1976 Hildebrand started his workshop, at the Tavistock Clinic in London, solely concerned with the treatment of individual patients over 60 and limiting the period of treatment of his carefully chosen patients to 16 sessions. His work, which continues, has been well documented (Hildebrand, 1982, 1983, 1985, 1986) and in a lecture, at the International Psychogeriatric Congress in Chicago, he stated (Hildebrand, 1989):

> Psychoanalysis can make a major contribution to our understanding of the dynamics of later life, since the theory can account for both adaptive and mal-adaptive responses to age specific stresses, and in the alteration in the balance of new and old object-related structures which the individual brings into play in order to try and cope with the demands of his own ageing process. . . . No other theory can account for feelings of abandonment and despair, intimacy and isolation, arrogance and disdain, stagnation and creativity as each of us struggles with the developmental task of 'the third age'.

There has not been, as far as I know, any comparable study of the use of psychotherapy groups for the aged, yet this understanding derived from psychoanalysis is central to such work. In general, people referred for group as opposed to individual treatment suffer from impoverished, inadequate or disturbed relationships, for it offers a situation more akin to real life for meeting interpersonal needs. Possibly this is one reason why aged people use these groups so productively, not necessarily because they have problems in interpersonal relationships (although this may be so and can be helped in the group), but because the experience is a microcosm of the real-life situation of which they find themselves deprived, and which they cannot regain on their own without the help and protection of the group. Meaningful communication, without which true relationships cannot exist, is often hard for the aged. Diminution of mental functioning, physical impairment, inability to make points succintly, losing the thread and impaired hearing all contribute to this. Also one aged person may fear releasing the pent-up feelings of another and consequently being overwhelmed. A group member illustrated this when, in speaking of her old-people's home, she said, "We are near one another and yet we just miss them". It is the responsibility of the therapist to prevent this and instead to promote interaction from which real relationships are derived.

In writing of the foundations of ego identity, Guntrip (1968) wrote:

> Meaningful relationships are those which enable the infant to find himself as a person through experiencing his own significance for other people and their significance for him, thus endowing his existence with those values of human relationship which make life purposeful and worth living.

This I would suggest is one of the strongest reasons for providing this sort of opportunity for aged people. A difficult member, who experienced both individual and group treatment, seemed to learn more in the group, for they resisted her excessive demands without rejecting her. She said, "Now that life has become worth living I have changed my time schedule"; this illustrates that those vital needs of infancy do not disappear at the end of life.

Studies undertaken on small groups have shown that it is cohesion which is the most influential variable in causing change (Yalom & Rand, 1966) and the groups of aged people usually cohered quickly. There were probably many reasons for this: they appreciated the privacy and confidentiality of the group and valued deciding for themselves what it was important to talk about. The themes in the groups were infinitely varied, and included the helping process, present discontents relating closely to family, and institutional experiences. Also life-stage issues were discussed, which seemed to have an urgency, perhaps because of the imminence of the end of life, and they would discuss present fears, thoughts about the afterlife and dreams. Frequently members would speak of something they said they had not been able to mention before, and there was one group where a member would always try to change the subject if a serious or painful topic was being discussed. She was unsuccessful, but it was interesting for she manifested the symptomatology of what Winnicott (1960) terms "the false self". In the penultimate session of that group she expressed her true feelings and fears, and in subsequent groups she attended this was maintained. That group cohered exceptionally rapidly and the purposeful way they worked, always resisting her diversionary overtures, was impressive.

In any group for the aged, a therapeutic milieu must be established. Truax (1966) has shown that where therapeutic conditions predominate, more change can be expected. In groups where all were suffering from senile dementia Winnicott's writings proved helpful in establishing the appropriate therapeutic culture. "I'm seen or understood to exist by someone. . . . I get back (as a face seen in a mirror) the evidence I need that I have been recognised as a being" (Winnicott, 1962); and "even when our patients do not get cured they are grateful to us for seeing them as they are" (Winnicott, 1967). Soon the members, as anxiety lowered, communicating at their different levels, began to imbibe the culture, sharing its values. The most noticeable overall change was the growing concern they began to show for each other.

At a time when the size of this group of aged people is increasing, I hope, although it has not been scientifically assessed, psychotherapeutic group work with them will be studied and developed. The rapid coherence of these groups suggested that a need was being met and the use of the group to express thoughts and feelings, turning existence into life, was impressive. The easier flow between outer and inner worlds seemed to reduce feelings of imprisonment in the latter and promote, in some measure, understanding of thoughts and feelings about present and past experiences, leading in some cases to changed behaviour in the present which enhanced freedom and well-being. Underlying the work is the basic aim to reduce emotional isolation, for as Storr (1960) has written, "A man's sense of his own identity as a person depends on communication with other persons".

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***Brief Reports***

# AIDS as a Current Psychopathological Theme

## A Report on Five Heterosexual Patients

JOHN TODD

Five patients are described, whose common fear of contracting, or a belief of having contracted, AIDS is the presenting feature. There is a need for liaison with psychiatrists in the provision of counselling services for AIDS patients.

There are many good accounts of the feelings experienced by patients who fear contracting, or believe they have contracted, AIDS (Abrams *et al*, 1986; Burton, 1987; Goldmeier, 1987; Grimshaw, 1987; Madeley, 1987). Psychiatrists are gradually becoming aware of the implications of the threat of AIDS, initially to homosexuals (Miller *et al*, 1985) and, more recently, to the heterosexual population (Goldmeier, 1987; O'Brien, 1987; Windgassen, 1987). What is not perhaps appreciated by our physical colleagues is that the patient who fears, or believes he has, AIDS, may suffer the same anguish as actual sufferers. Furthermore, the nature of many abnormal psychological phenomena is such that they may not respond to simple reassurance; therefore, negative HIV testing and counselling will not abolish functional syndromes which feature AIDS. HIV is a neurotropic virus and infection of the central nervous system may be common in AIDS patients (Fenton, 1987). The diagnosis of a functional psychiatric syndrome can, therefore, be confounded by the fact that mood disorders and psychotic disturbances may be features of AIDS-related cerebral organic syndromes.

The patients described below all attended a small, general, adult psychiatric ward attached to a general (military) hospital which recently acquired an AIDS counselling facility. The psychiatric ward, which is also the centre for a community psychiatric service, has a catchment population of about 40 000, mainly young, adults. Before June 1987, psychopathology which included AIDS in its content had not been encountered by the author. It is, therefore, noteworthy that, between June and October 1987, five such patients have been seen. Only one of these was referred by the AIDS counsellor; however, the recent formation of an AIDS counselling service corresponds to a recent drive for AIDS health education within our catchment. It should be pointed out that, at the time of writing, none of the patients had HIV infection.

## Case reports

### Case 1 – adjustment reaction

A 32-year-old married lady was referred from casualty at midnight. Three months previously, she had had several brief extramarital affairs which were precipitated by marital dissatisfaction and facilitated by alcohol. She felt guilty, with some dysphoria, but without biological shift or suicidal ideas. One week before presentation she had noticed a rash on her arm and thighs, and some bruises from her brassiere straps. She began to fear, and then believe, that she had contracted AIDS. In an effort to protect her husband from the disease, she had refused intercourse. Presentation in a state of extreme anxiety and guilt was precipitated by his express desire to have intercourse that evening. The patient had no family history of psychiatric disorder, but had previously seen a psychiatrist for mild postnatal depression. She was reassured by negative HIV testing and was engaged in marital therapy; her relationship improved and her fears resolved without recourse to pharmacotherapy.

### Case 2 – psychogenic paranoid psychosis

A 30-year-old married man was referred from the AIDS counsellor following his refusal to accept that he was HIV negative. Six months before referral he had a mild, refractory infection of the respiratory tract. He began to worry unduly about it, and then, retrospectively, began to realise that he could have caught AIDS from a one-off casual relationship five years previously. We now know that there had also been a prodromal period of deterioration in work performance in the year preceding his respiratory infection. Three months before referral, he finally became convinced, by a lecture on AIDS, that he had the disease. He importuned his general practitioner (GP) until, finally, he was referred for an HIV test. At the time of presentation to the psychiatrist, his belief was of delusional intensity and was beginning to systematise, so that he thought there was a medical plot to put all the AIDS sufferers in one place and prevent them from knowing their diagnosis. There was no hallucinosis and no evidence of a depressive illness or an organic precipitant. The patient was of oversensitive premorbid personality, and had a family history of schizophrenia. At interview he repeatedly pointed at freckles

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on his arm, which he said were increasing in number, were present on his close family and were undoubtedly 'evidence' of infection with HIV. He was treated with trifluoperazine 10 mg twice daily, his delusions resolved and he gained insight into the abnormal nature of his thoughts. He was asymptomatic within one week, and he was able to discontinue trifluoperazine after three weeks without relapse.

### Case 3 – obsessive–compulsive neurosis

A 36-year-old married Maltese lady was referred by her GP with a six-month history of a fear of becoming contaminated with AIDS. This severely limited her lifestyle; she was afraid to touch people, and avoided intercourse with her husband, going out, and coming into medical contact. She also indulged in compulsive washing, and cleaned her house twice daily. She denied panic attacks and was not depressed. For eight months before the onset of this problem, she had expressed hypochondriacal concern about toxoplasmosis and rabies to her GP. There had been no extramarital contact at any time. There was no family history of psychiatric illness; the patient had lived in Malta until early adulthood, and had always been socially anxious. The only precipitant for her hypochondriacal concern had been her second pregnancy. Treatment along behavioural lines was initially partially successful. She received training in anxiety management, exposure *in vivo* and response prevention; however, she did not undertake all of her homework. She commenced clomipramine, but it had to be abandoned because of side-effects and, finally, she gained some benefit from the anxiolytic properties of thioridazine (25 mg three times daily). She had never been well motivated towards therapy, was demanding of medical time and required repeated reassurance between out-patient appointments; she refused admission to hospital. Ultimately she was discharged to the care of her GP only partially recovered.

### Case 4 – panic disorder

A 37-year-old married lady was referred urgently by her GP because of suicidal ideation. She gave a four-day history of misery, which was related to a fear of having contracted AIDS. Three months before referral she had had several casual affairs. She had been a religious woman and felt extreme guilt and remorse over her behaviour. She had progressed to developing paniç attacks over these three months and had also experienced several concomitant life events. It was the somatic symptoms of panic attacks, in conjunction with increased media coverage of AIDS, that produced the 'realisation' four days before referral that she could be infected. She had a past history of treatment with antidepressants, and there was a family history of anxiety and depression. She had had a strict Roman Catholic background and had an unhappy, sexually unsatisfactory marriage. A negative HIV test was reassuring but not curative. Her panic disorder was effectively treated with imipramine 100 mg daily, on which she was maintained for three months. Subsequent withdrawal of imipramine did not result in a relapse.

### Case 5 – anxiety state

A 26-year-old married man was referred by his GP with an eight-month history of anxiety that he had caught AIDS following a casual heterosexual contact. He sufffered from frequent mild physical ailments, together with initial insomnia, which had gradually settled after he had confessed his infidelity to his wife. His anxiety recurred three weeks before referral, when he had experienced mild exertional dyspnoea. This gradually worsened and he also developed paraesthesia and palpitation. He then consulted his GP. He had no past or family history of psychiatric disorder, but was of anxious, introverted premorbid personality. He was offered HIV testing but declined. He received training in relaxation techniques, hyperventilation control and cognitive techniques for anxiety management, to good effect.

## Discussion

Although a very small series, these patients cover a wide range of psychopathology. Their almost simultaneous appearance from a small catchment population, particularly in the absence of previous similar disorder, merits description. Four of the patients were sufficiently acutely disturbed for their psychiatrist to want to admit them for a short time to hospital; all but one made a good recovery. All patients either had a past history of psychiatric disorder or had personality difficulties. In the obsessive–compulsive patient, AIDS phobia had simply replaced her other illness phobias; however, the other four patients show a common pattern, whereby anxiety engendered by guilt over infidelity produced somatic symptoms. Following increased media coverage, these symptoms were then identified as indicative of disease. It is of interest that they had all said that one or other of their symptoms, for example breathlessness and tiredness, had featured in television programmes on AIDS. This pattern of presentation is common in high-risk groups (Fenton, 1987). Windgassen (1987) described similar presentation among heterosexuals with AIDS panic. The syndromes resemble venereophobia. Oates (1984) described how the combination of sexual contact with someone who might have a venereal disease and exposure to a technically compelling documentary can produce an anxiety state. The idea of infection can become fixed, requiring repeated reassurance by medical staff. The conviction of having a venereal disease is then the vehicle for guilt or anxiety symptomatic of an underlying psychiatric disorder.

It is anticipated that AIDS as the content for psychiatric illness will continue to increase in frequency, as will the number of AIDS-related functional and organic syndromes. Although only one patient was referred by the AIDS counsellor, the author would like to recommend that psychiatrists are always invited to liaise closely with those who perform AIDS counselling. It is hoped that this may help to prevent disastrous sequelae (O'Brien, 1987).

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# Organic Reaction in AIDS

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A case of organic brain syndrome in a patient with AIDS is described. The implications for medical and psychiatric services are discussed and problems highlighted.

The psychiatric complications of AIDS have become increasingly recognised (Nichols, 1985; Faulstrich, 1987) since the original description of the clinical features of the disease in the USA in 1981 (Masur *et al*, 1981; Gottlieb *et al*, 1981). These usually consist of psychogenic reactions (Holland & Tross, 1985), similar to those in other life-threatening disorders, such as anxiety and depression. However, there are often also feelings of rejection by relatives and friends, and a sense of isolation.

Afflicted patients frequently suffer a variety of complications in the central nervous system (Carne & Adler, 1986). Although some of these are well-recognised opportunistic infections, much more common is a progressive encephalopathy that has not previously been described in other immunosuppressed patients (Navia & Price, 1986). In adults, this encephalopathy characteristically manifests as a subacute dementia accompanied by motor dysfunction (Snider *et al*, 1983); however, a variety of other organic reactions accompanied by mood change have been described (Nurnberg *et al*, 1984; Hoffman, 1984), although this is one of the first cases reported in the British literature.

## Case report

A 35-year-old homosexual man was admitted under section 2 of the Mental Health Act 1983 to a general hospital in September 1985, following an episode of disturbed behaviour, accompanied by incoherent conversation, disorientation in time and space, and visual hallucinations. Previous history revealed he had been diagnosed as HIV-antibody seropositive eight months earlier, in New York. He had been treated for *Pneumocystis carinii* pneumonia, and treated with interferon for Kaposi's sarcoma four months before admission. There was no previous psychiatric history or family history of psychiatric illness. He was in possession of amphetamines on admission, but a urine drug screen was negative and there was no other history of drug abuse. His behaviour in hospital continued to be erratic, disinhibited and distractible. He was elated in mood. He had pressure of speech and visually hallucinated, e.g. he was seeing rabbits in the room, and misidentified people around him. His mental state fluctuated over this three-month stay. One month after admission he remained restless and distractible, but with no evidence of pressure of speech. There was evidence of patchy disorientation in time and long- and short-term memory loss.

In hospital he was treated with major neuroleptics. However, severe Parkinsonian side-effects were experienced with the use of haloperidol and chlorpromazine. Thioridazine was the only drug tolerated by the patient. During the final month of his stay, his short-term memory improved, but he had no memory of the circumstances of his admission into hospital or his length of stay. He appeared slightly grandiose and said, "I must be the only man cured of AIDS. I've had over 1000 partners." On discharge his cognitive status was intact, but his mood slightly elevated, and he retained grandiose ideas. Ten months later he died, with a normal mental state and cognitive function.

Biochemical and haematological profiles, urinalysis, and a computerised-tomography (CT) head scan were all normal. Analysis of CSF revealed a slightly elevated protein level at 0.49 g/l, glucose 3.4 mmol/l, polymorphs $<1/\text{mm}^3$, lymphocytes $2/\text{mm}^3$ and a red cell count of $3000/\text{mm}^3$, but the CSF was not tested for HIV antibody. An EEG showed irregular 7–8 Hz alpha-activity, a moderate amount of non-focal theta-activity and diffuse beta-activity, suggestive of a mild diffuse cortical disturbance.

## Discussion

The clinical picture presented by this patient conforms to the DSM–III diagnosis (American Psychiatric Association, 1980) of organic mental syndrome. The precipitant here may have been the HIV infection, as there was no evidence of an opportunistic infection, and all investigations including CSF examination were essentially normal. However, it is also possible that this was a functional psychiatric illness, although there was no previous or family psychiatric history, and there was only a single episode of illness. Although there was evidence that he had been associating with amphetamine abusers, the clinical picture described is not typical of an amphetamine psychosis, which tends to be short lived and paranoid in type. In cases such as these, investigations should include full biochemical and haematological profiles, urine screen for drugs, chest X-ray, CT scan, EEG and CSF examination to exclude organic causes.

Previous case reports have described severe memory deficit accompanied by thought disorder, grandiose delusions and dysphoria (Rundell *et al*, 1986). These are associated with dilatated ventricles on CT, and progressive deterioration in clinical picture to dementia and death. In the patient described here, however, there was an apparent resolution of the cognitive deficit and a normal CT scan. In this instance the diagnosis of HIV-antibody seropositivity antedated the psychiatric symptoms, but in at least a few described cases, the psychiatric illness antedated the diagnosis (Kermani *et al*, 1984; Gabel *et al*, 1986; Halevie-Goldman, 1987; Navia & Price, 1987). With the increasing prevalence of HIV carriers, this diagnosis should be considered in any person presenting with an organic psychosis in a high-risk group. If the prevalence increases as predicted, it could have serious implications for psychiatric services. As well as patients presenting with an acute psychosis, dementia is becoming increasingly recognised in terminal stages of AIDS, and this may present further demand on psychiatric beds which are currently being reduced in number (Davies, 1988).

The case described highlights several issues concerning management for the group of patients presenting with an acute psychosis. This patient was nursed in isolation in a general hospital with the constant supervision of psychiatric nurses. Those who present with a psychosis that may be of organic origin, and who are known to be HIV-antibody seropositive, should ideally be investigated in a medical ward to identify any organic lesion and its treatability. However, patients with a previous history of psychiatric illness who become HIV positive, and HIV-positive sufferers who develop an acute psychotic illness, may best be nursed in a psychiatric hospital by nurses with experience in dealing with psychiatric patients.

Patients need to be nursed in isolation if there is a particular risk of spreading infection (Geddes, 1986), e.g. those with profuse diarrhoea, or those with a psychosis who are likely to be violent. There are particular risks in treating patients with a psychosis who are HIV positive – these include possible transmission of the virus due to blood spilled in a violent incident or from self-injury; injuries sustained while giving injections; and an increased risk of infection by sexual intercourse with the patient who is disinhibited. These risks may be minimised by taking precautions when handling patients, and barrier nursing. It is also important to provide support and education for staff when handling HIV-positive patients, and to offer advice and information about factors contributing to HIV infection (Nichols, 1985).

As psychiatric complications in patients who are HIV positive and those with AIDS become more common, resources in psychiatric units will have to be provided to meet the needs of the patients.

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# Gilles de la Tourette's Syndrome

## Amelioration Following Acute Akinesia During Lorazepam Withdrawal

SIMON WRIGHT and MALCOLM PEET

A case of Gilles de la Tourette's syndrome (TS) is described, in which a state of akinesia developed during an attempt to withdraw lorazepam by diazepam substitution. This was followed by sustained amelioration of the TS symptoms.

Aetological theories of Gilles de la Tourette's syndrome (TS) have used both psychological and biological models (Meyer & Rose, 1986). Successful treatment of TS with haloperidol (Shapiro & Shapiro, 1968) led to the suggestion that dopaminergic overactivity may be implicated (Snyder *et al*, 1970), although there is no direct evidence to support this hypothesis.

We report a case of TS in which clinical amelioration followed an acute akinetic state which coincided with an attempt to withdraw the patient from lorazepam.

## Case report

A 47-year-old, married, Caucasian man was initially referred in June 1984 with a 14-month history of agitation, decreased concentration, irritability and depression; he repeatedly banged his forehead with his fist and scratched his face. There was no obvious precipitating factor. His premorbid personality was described as anxious and shy. A diagnosis of depressive illness was made and he was treated with dothiepin (50 mg t.d.s.). His depressive mood improved but his other symptoms remained. He was treated with behavioural psychotherapy over subsequent months, but his symptoms persisted, and he finally discharged himself from hospital day care in January 1986. His medication then was lorazepam (1 mg t.d.s.).

His symptoms increased in severity and in April 1986 he was readmitted as an in-patient. An electroencephalogram and skull X-ray were normal, apart from an ivory osteoma in the frontal sinuses, secondary to his self-inflicted trauma. Psychological testing showed no intellectual impairment, and he was discharged in June 1986 with no change in his condition and still taking lorazepam. In January 1987, he was referred to our unit with a four-month history of coprolalia, barking and increased frequency of his self-mutilation. He had become housebound because of the severity of these symptoms and his marriage was under considerable strain.

More detailed questioning elicited that he had had a facial tic between the age of 11 years and his late teenage years. A diagnosis of TS was made and he commenced on haloperidol. His symptoms were ultimately brought under control on haloperidol (10 mg t.d.s.) and orphenadrine (100 mg three times t.d.s.). He was still taking lorazepam 1 mg three times daily and also received fluvoxamine (100 mg at night) to alleviate his depressive symptoms.

By the last week in April 1987 his general condition was very much improved, and it was decided to change his lorazepam to diazepam (5 mg t.d.s.), with the aim of weaning him off benzodiazepines. However, three weeks later he developed increasing anxiety, agitation and restlessness, as well as dysarthria, a lowered level of consciousness, disorientation in time and place and poor short-term memory. Physical examination revealed generalised hypertonicity and hyper-reflexia. As this was suspected to be a drug-related confusional state, lorazepam was resubstituted for the diazepam, the dosage of haloperidol was reduced to 10 mg twice daily and the orphenadrine to 50 mg t.d.s. The fluvoxamine was discontinued. He was admitted as an in-patient, and over the next three weeks his confusional state resolved. However, he showed continuing deficit in short-term memory six weeks after the onset of the acute confusional state. Because of this, further investigations were carried out. A computerised tomography demonstrated mild cortical atrophy only. A lumbar puncture revealed no abnormality. The electroencephalograph showed some slowing of the dominant alpha rhythm compared to the 1986 recording. These investigations were done after the acute confusional state had resolved, although the symptoms of TS remained marked at this time.

Because of continuing concern over his cognitive functioning, it was decided to try to discontinue all medication. The haloperidol was stopped at the beginning of August 1987, followed two weeks later by the substitution of lorazepam (1 mg t.d.s.) by diazepam (5 mg q.i.d.). During the subsequent seven days he again developed an acute exacerbation of anxiety, restlessness, insomnia and anorexia, together with mild dysphagia and unsteadiness of gait. This was followed over the next two days by the development of acute akinesia. He lay immobile across the bed with his arms and legs flexed, his face mask-like and unblinking, and hypersalivating. He then developed lead-pipe rigidity of his limbs, a slight resting tremor, and when he was able to walk he showed a markedly Parkinsonian gait. Throughout this episode he remained in clear consciousness. Therefore, during the last week of August 1987, the lorazepam was again resubstituted for the diazepam, at the previous dose of 1 mg t.d.s. Over the next two days his acute akinetic syndrome resolved and his short-term memory returned to normal. He also showed marked reduction in his previously severe symptoms of TS, the only sign of which was an occasional murmured obscenity (as reported by his wife) when he was at home. His coprolalia and self-mutilation completely disappeared in the day hospital. He continues to take lorazepam and his TS remains abated.

## Discussion

The genesis of this syndrome is uncertain, but one possibility is that it may have been neuroleptically induced. However, this is unlikely because the patient had discontinued the haloperidol three weeks previously and had no access to illicit supplies. Although haloperidol can have lasting residual effects (Campbell & Baldessarini, 1985), a reaction of this type would be expected during neuroleptic treatment rather than three weeks after stopping it.

Another possibility is that withdrawal from lorazepam was the cause of his acute akinesia. There is strong circumstantial evidence for this. Each time his lorazepam was changed to diazepam he developed symptoms suggestive of a benzodiazepine withdrawal syndrome. This implies that the dosage of diazepam was not sufficient to compensate for the withdrawal of lorazepam. Other drugs may have contributed to the acute confusional state during the first attempt to withdraw lorazepam, but he was taking only diazepam when he developed the akinetic syndrome. The mechanism which could underly this is uncertain. There is evidence that striatal dopamine release is reduced in animals by high doses of diazepam, probably because of an agonist effect at presynaptic GABA-ergic receptors (Wood *et al*, 1984), and increased dopamine turnover has been reported during benzodiazepine withdrawal (Rastogni *et al*, 1978). However, an acute akinetic state consequent upon benzodiazepine withdrawal would not be predicted from these data, and acute akinesia is not a recognised feature of benzodiazepine withdrawal (Lader, 1983). It may be that there is an abnormality of dopamine-related systems in TS which would modify the neurochemical effects of benzodiazepines.

The state of akinesia was closely similar to the classic presentation of acute encephalitis lethargica, described by von Economo (1931). Post-encephalitic Parkinsonism, due to nigrostriatal dopaminergic hypofunction, was a common sequel of the acute akinetic state.

In our patient an acute akinetic state, which may have reflected an acute reduction of functional dopaminergic activity, was followed by a sustained improvement in the TS. This gives further support to the hypothesis that dopaminergic or other functionally related pathways are involved in the aetiology of TS.

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# Treatment of Mood Disorder Associated with Binswanger's Disease

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Binswanger's disease is a cerebrovascular disorder affecting deep white matter and is associated with dementia and affective disturbance. In the case reported, the mood disorder was successfully treated with a combination of lithium and amitriptyline, resulting in an improved quality of life despite continuing cognitive decline. This underlines the importance of treating the affective component of organic dementing conditions on its own merit.

Binswanger's disease is a variant of cerebrovascular disease in which the periventricular and deep white matter bear the brunt of the neuropathological process and in which there are atherosclerotic changes in local nutrient arteries (Olzewski, 1962). The clinical accompaniment has been reviewed by Caplan (1985) and consists of a progressive dementia with or without neurological signs, beginning in middle or old age, and often associated with psychiatric disturbances such as depression, euphoria, irritability and anxiety. The dementia takes the form of a generalised slowing of intellectual processes, memory impairment and disorientation.

The advent of computerised tomography (CT) and magnetic resonance imaging (MRI) has allowed changes in the white matter to be identified *in vivo*, and the neologism leuko-araiosis has been coined to describe such a finding (Hachinski *et al*, 1987). Whether leuko-araiosis actually represents Binswanger's disease is under debate (Hachinski *et al*, 1987) because, while the latter used to be a relatively rare finding at post mortem, the former is becoming an increasingly common observation.

Nevertheless, an association between the cardiovascular indices of stroke and hypertension with leuko-araiosis has been described (Kinkel *et al*, 1985; Inzitari *et al*, 1987) and, indeed, one report has convincingly demonstrated an association between leuko-araiosis, as an isolated finding, and intellectual impairment, suggesting that this might be a marker for early dementia (Steingart *et al*, 1987).

There are few studies of therapeutic strategies in Binswanger's disease, and no evidence to suggest that successful treatment of the cardiovascular complications either arrests or improves the neuropsychiatric features. Biemond (1970) reported that the cerebrovascular dilator hydergine improved cognitive function in one patient. There is only one case report, to our knowledge, of a beneficial effect of psychotropic medication on the mood disorder associated with Binswanger's disease (Summergrad, 1985). In this case, a monoamine oxidase inhibitor, tranylcypromine, but not a tricyclic antidepressant, produced a marked improvement in mood and day-to-day activities. However, this patient had a 14-year history of a relapsing severe depressive illness and on admission was found to have hypopituitarism. Thus the depressive illness may have been coincidental but not integral to Binswanger's disease. We report a case in which the first episode of an affective disturbance arose in the context of a diagnosis of Binswanger's disease, and which was successfully treated with antidepressant drugs.

## Case report

The patient was a 70-year-old man with a nine-month history of social withdrawal, lethargy, intermittent disorientation and memory problems. On admission to hospital he had psychomotor retardation, poor appetite and weight loss; this picture was punctuated on at least two occasions by 48-hour episodes of hyperactivity and excitability. Cognitively he was disorientated in time and displayed impairment of recent memory. Physical examination revealed dyspnoea, fast atrial fibrillation and hypertension. Extensive investigations confirmed cardiovascular disease but did not reveal any treatable organic cause for his mental state. A CT scan demonstrated ventricular enlargement and patchy changes in the deep white matter. An MRI scan was performed (Fig. 1), which showed periventricular white-matter lesions, with no evidence of cortical infarction.

These findings suggested a diagnosis of Binswanger's disease in association with cardiovascular disease and hypertension. The physical complications were treated successfully with a combination of digoxin and diuretics. In view of the observed rapid cycling of mood, lithium carbonate (800 mg/day) was initiated. Because of cardiovascular risk, antidepressants were initially withheld; however, as there was no improvement of mood after two months, mianserin was added, up to a dose of 120 mg/day. After three months on this combination of drugs his mood improved, he became orientated and his memory appeared normal. He then stopped attending hospital and failed to take his medication. This resulted in rapid deterioration and he became quite clearly depressed. A combination of lithium carbonate at the previous dose and amitriptyline up to a dose of 150 mg/day was initiated, with subsequent and significant improvement, which has continued for over a year.

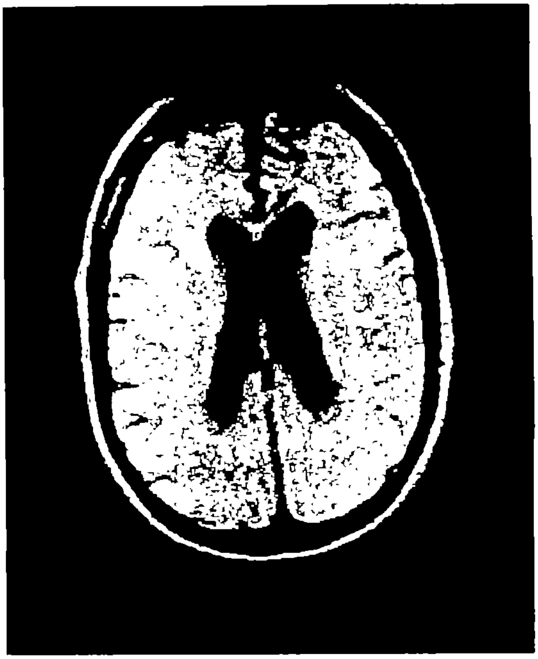

FIG. 1. Magnetic resonance image (spin-echo) demonstrating areas of high signal intensity within the white matter (focal) and around the ventricles (confluent).

Although the impression was that cognitive function had improved along with his mood, this was not borne out by formal neuropsychological tests. On admission there was no evidence of general intellectual decline, but he performed poorly on specific tests of memory (Wechsler logical memory and associate learning (Wechsler & Stone, 1945), Kendrick object learning (Kendrick, 1985)). After clinical improvement, he continued to perform badly on the memory tests, and in addition his performance IQ estimated by the Wechsler Adult Intelligence Scale (Wechsler, 1955) had deteriorated, perhaps indicating the onset of a more global dementing process.

## Discussion

Several neurological disorders exist in which the pathological process mainly affects subcortical structures, and in which there is a neuropsychiatric component characterised by psychomotor slowing, memory impairment, difficulty with problem solving and mood disorder. Examples are Parkinson's disease, Huntington's chorea, and progressive supranuclear palsy – the so-called subcortical dementias (Albert *et al*, 1974; McHugh & Folstein, 1975; Albert, 1978). Furthermore, diseases predominantly affecting cerebral white matter can also develop this clinical picture, for example multiple sclerosis and Binswanger's disease (Ron, 1985; Caplan, 1985). Although there have been no systematic studies of the management of the psychiatric aspects of these diseases, the affective disorder is often considered to parallel the cognitive decline and to reflect the underlying neuropathological changes. In this report we have described such a case in which the patient's quality of life was improved, despite continuing cognitive decline, by successful treatment of the mood disturbance. This underlines the importance of treating the psychiatric component of organic dementing conditions on its own merit.

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# Wernicke's Encephalopathy in an 18-Year-Old Woman

STUART TURNER, LYNN DANIELS and STEVEN GREER

An unusually young woman (18 years old) who misused alcohol and developed Wernicke's encephalopathy is described.

Wernicke's encephalopathy is an infrequent but well-recognised complication of alcohol misuse in men over the age of 20. We describe the clinical syndrome in a young woman who misused alcohol.

## Case report

The patient, an 18-year-old woman, had started drinking alcohol at the age of 13. For at least six months before her admission to hospital, she was drinking very heavily. She experienced alcoholic 'black-outs', and in the mornings had 'shakes' and a craving for alcohol. She started drinking in the morning and in an average day she would consume eight pints of beer and a bottle of spirits. She had acquired a poor appetite and sometimes did not eat for two or three days. There were no other features on present examination or in her history to suggest anorexia nervosa; neither was there any other significant past medical history. She was admitted two days after a very heavy drinking bout, which had led to her being escorted home by two strangers. As there were no vacant beds in our unit, she was guested for three days at another hospital, until a transfer could be arranged. During this time she reports having had intermittent diplopia; she received no vitamin preparations until the morning of her transfer to our unit, when she was given one injection of Parentrovite, a parenteral multivitamin preparation (thiamine 250 mg, riboflavin 4 mg, pyridoxine 50 mg, nicotinamide 160 mg, ascorbic acid 500 mg). After her transfer she was found to be disorientated, with impaired conscious level and poor concentration. She was unable to recall any items of a name and address at one minute. She complained of horizontal diplopia on right lateral gaze, with extinction of the lateral image on covering the right eye. She was ataxic, and had vertical and some ill sustained horizontal nystagmus. There was a mild peripheral sensory neuropathy. She was treated with intravenous Parentrovite and reducing doses of chlormethiazole. The eye signs recovered quickly. Her memory was grossly impaired for several days; this was out of proportion to her other cognitive deficits. Two weeks after presentation, formal psychometry revealed that she was of above average intelligence. Although her memory function was by then within the normal range, subjectively her memory never returned to its premorbid state. It took her three months to recover from the peripheral neuropathy. Further investigations (including computerised tomography and EEG) were normal.

## Comment

This young woman presented with the features of a Wernicke's encephalopathy. She had evidence of an acute organic reaction, external ophthalmoplegia and cerebellar dysfunction. Objectively, her memory was severely affected during the episode and subjectively remained below normal. Wernicke's encephalopathy is likely to have complex antecedents, including genetic, nutritional and social factors (Price, 1985). It is frequently assumed to be largely restricted to older male alcoholics. However, in one large series of 245 patients with the Wernicke-Korsakoff syndrome (Victor *et al*, 1971), although the sex ratio (male:female) in the fifth to seventh decades was 2:1, in the third and fourth decades this was reversed; no subject was less than 20 years old at onset. The same study noted that there were 11 women between the ages of 20 and 29; three patients (all women) gave a history of drinking for less than one year. There is post-mortem evidence to suggest that the pathological syndrome is detected clinically in only 20% of cases (Harper, 1983). This potentially disastrous complication of alcohol misuse may be unrecognised particularly in younger women. It requires early and energetic treatment; a high index of suspicion is essential.

## Acknowledgements

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*British Journal of Psychiatry* (1989), **154**, 263–264

# Hyponatraemia and Clomipramine Therapy

D. R. PLEDGER and H. MATHEW

The fortuitous detection of SIADH is described in a patient receiving clomipramine therapy.

A wide variety of drugs have been implicated as causing hyponatraemia via the syndrome of inappropriate antidiuretic hormone secretion (SIADH). No particular type of drug appears to be implicated and no mechanism has been elucidated. A number of reports (Garson, 1979; Madahusoodanan & Osnos, 1981; Abbott, 1983) have implicated psychoactive drugs and most patients have been emergency admissions to hospital. We report a patient in whom the condition was fortuitously detected before this situation arose.

## Case report

The patient was a 64-year-old married woman with a long history (19 years) of treatment for depression and anxiety. Previous treatment had included a range of benzodiazepine and tricyclic drugs (Table I). None of these, nor carbamazepine and temazepam used later, were beneficial. In lieu, she commenced clomipramine (25 mg t.d.s.) on 20 October 1986. The possibility of future lithium treatment was suggested at this stage, and routine serum electrolytes and creatinine clearance were requested. Apart from the psychological problems mentioned, the patient was asymptomatic.

TABLE I

*Drugs prescribed over the course of psychiatric disturbance before this presentation*

| *Benzodiazepines* | *Tricyclic drugs* | *Other* |
|---|---|---|
| Chlordiazepoxide | Trimipramine | Trisilate |
| Diazepam | Amitriptyline | Flupenthixol |
| Flurazepam | Butriptyline | Mianserin hydrochloride |
| Ketazolam | Nortriptyline | Orphenadrine citrate |
| Clorazepate dipotassium | Dothiepin | Trazadone hydrochloride |
| Temazepam | | Carbamazepine |
| Prazepam | | Tryptophan |
| Alprazolam | | |
| Oxazepam | | |
| Triazolam | | |

Initial serum electrolytes were measured on 22 October and, following the finding of hyponatraemia, a repeat specimen was requested to confirm this finding (23 October). The course of biochemical measurements is charted in Table II.

A provisional diagnosis of SIADH secondary to tricyclic therapy was made and the patient was instructed to cease taking the tricyclic on 27 October. The biochemical picture in the following two days appeared little improved and on closer questioning it appeared that the patient had been recommenced on clomipramine by the deputising service of the general practitioner, who was unaware of a possible SIADH.

The importance of stopping this drug was again emphasised to the patient on 30 October and electrolyte levels a week later showed a normal pattern.

One month later, the patient was asymptomatic and not feeling particularly depressed, in spite of ceasing tricyclic therapy.

## Discussion

A wide variety of drugs has been implicated in the development of SIADH, including a number of psychoactive drugs (Streeton *et al*, 1980). While the occurrence of SIADH in a psychiatric setting is recognised, the actual incidence is unclear from the literature. Jose & Perez-Cruet (1979) concluded that the incidence of water intoxication in chronic psychiatric patients was of the order of 3–5%. Sandifer (1983) estimated that two to three cases associated with psychotropic drugs per year may be

TABLE II

*Biochemical results*

| | *Serum* | | | | | | | *Urine* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Date: 1986* | *Na: mmol/l* | *K: mmol/l* | *Cl: mmol/l* | *$HCO_3$: mmol/l* | *Urea: mmol/l* | *Creatinine: mmol/l* | *Osmolality: mOsm/kg* | *Na: mmol/l* | *K: mmol/l* | *Osmolality: mOsm/kg* |
| 22 October | | 124 | 4.5 | 88 | 5.6 | 60 | — | — | — | — |
| 23 October | 123 | 4.5 | — | — | 4.5 | — | 253 | 77 | 61 | 613 |
| 28 October | 124 | 4.5 | 90 | 24 | 3.7 | — | 255 | 18 | 46 | 404 |
| 29 October | 126 | 5.0 | 90 | 27 | 5.2 | 68 | 259 | 67 | 71 | 628 |
| 6 November | 133 | 4.5 | 95 | 25 | 5.2 | 54 | 269 | — | — | 742 |

expected in a tertiary-care hospital, while Ananth & Lin (1986) referenced over 30 cases of SIADH induced by psychotropic drugs reported in the literature over a six-year period.

No definitive mechanism has been found for the syndrome, although a number of possibilities have been advanced: compulsive drinking of water seen in some psychotic patients (Sandifer, 1983); increased fluid intake to counter dryness of the mouth (possibly caused by the anticholinergic effects of neuroleptics) (Lewis, 1971); increased sphincter tonus of the urinary bladder; and a local anaesthetic effect and a central antidiuretic effect (Appel *et al*, 1971).

The patient under discussion had previously been prescribed a number of drugs known to have this side-effect, without any apparent problems, although serum electrolytes had not been measured on these occasions. As these drugs had been taken for a long time, it is unlikely that serious hyponatraemia would have gone unnoticed. Apparent sensitivity to one particular drug (amitriptyline) has been recognised in this context previously (Madahusoodanan & Osnos, 1981).

Although measurement of antidiuretic hormone was not made, the criteria for diagnosis of SIADH were met - hyponatraemia, hypo-osmolality, lack of maximal urinary sodium retention and urinary osmolality greater than serum osmolality. These findings were not accompanied by evidence of volume depletion, cardiac failure, renal failure or hypothyroidism.

A previous case of SIADH on clomipramine was reported by Garson (1979), whose patient was referred as an emergency by her family practitioner. It was fortuitous that our patient had her electrolyte levels checked several days after clomipramine therapy had commenced, as there was no clinical indication of a problem at that time.

A number of lessons stem from this case. The fact that a patient has not previously suffered electrolyte disturbance whilst on tricyclic therapy is no indication that this situation will appertain if the drug regime is altered.

As the initial symptoms of hyponatraemia (confusion, weakness, etc.) may mimic the psychiatric condition, clinical impression may not be a good guide.

It is impossible to predict which patients will be affected. An argument can be made for single measurement of serum and urine electrolyte levels on those patients whose symptoms are suggestive of possible SIADH following commencement or change of tricyclic therapy. It is hoped that this will prevent the full sequalae of SIADH developing in patients at risk.

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Editor: Ian Pullen

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## Psychiatrists' responses to personality disorder

SIR: Lewis & Appleby (*Journal,* July 1988, **153**, 44–49) surveyed psychiatrists' responses to case vignettes. They found the results so damning that they proposed the abolition of the concept of personality disorder (PD). Of course, this is not a new proposition. However, their data seem to me to suggest quite another interpretation of which psychiatrists can be proud.

Twenty-two psychiatrists refused to participate, "usually complaining that there was insufficient clinical information on which to base judgements". This seems to be a coherent if inflexible response as, irritatingly for researchers (including myself), it is almost always safe and reasonable. The only way round this is to make the vignettes so long that most of the sample throw them straight in the bin. Round one to a minority of the sample!

For the 72% who did return usable answers, the results showed that the allocation of a diagnosis of PD two years previously was the main significant independent factor determining responses to the six different vignettes. By contrast, a diagnosis of depression, an attempt to influence the answering by direct instruction, a change of the gender of the patient, and an intriguing change in the designation of the patient from a "man" to a "solicitor" all had little statistically significant effect.

Surely this indicates only that those psychiatrists who were willing to assist the researchers may have naïve faith in their predecessors' diagnosis *when this is a substantial proportion of the total information made available to them.* They were influenced by a trait, not by a state diagnosis from two years prior to presentation, and they were not prejudiced by gender or social class. These seem to me to be admirable findings!

Drs Lewis & Appleby clearly did not need to conduct this interesting experiment to argue that the diagnosis of PD is "an enduring perjorative judgement rather than a clinical diagnosis". That is a problem of clinical psychiatry, as attempts to separate 'pathological' and 'normal' degrees of dependent or manipulative response to internal distress or external stress are unlikely to divest these issues of moral and aesthetic connotations unless morality and aesthetics also have no substantive validity. Surely the traditional props of 'objective diagnosis', such as the existence of a known organic cause or an acute time course, are unhelpful ways to separate 'diagnoses' from moral judgements? Should we not attempt to help someone with a depressive response to situations if their response appears to be a long-standing pattern rather than a transient state? Clearly what is important is that our responses should be helpful or at least do no harm. It is undoubtedly the case that our ideas of personality are clumsy. It is also true, as Drs Lewis & Appleby have shown, that psychiatrists are less confident of helping someone with a personality disorder than they are of helping someone with a transient depression (probably rightly), and it is likely that this may lead to punitive and unhelpful responses.

These are serious failings of our knowledge and behaviour that probably cause substantial suffering and neglect. However, until it can be shown that the diagnosis of the personality disorders genuinely has no inter-rater reliability and no prognostic or therapeutic validity then it is pre-emptive to recommend the abolition of the concept. Evidence of such complete lack of validity is not the result of many recent studies of the subject, despite the continuing difficulties of definition, nor was the study by Drs Lewis & Appleby sufficient to deal such a body blow to the concept of the personality disorders. What their study did test was the internal coherence of psychiatrists' diagnostic methods and their confidence in their therapeutic powers. The respondents seem to emerge as coherent but depressed about treating personality problems, and perhaps a little naïve under the pressure of the experimental task. I feel more proud to be a MRCPsych and a member of any future survey than I was before reading their study!

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SIR: Lewis & Appleby (*Journal*, July 1988, **153**, 44–49) presented a thoughtful, interesting, and provocative, but somewhat misleading critique of the concept of a personality disorder. They obtained 6-point semantic differential scores on case vignettes that varied with respect to the presence of a personality disorder (PD). Cases that involved a personality disorder resulted in more critical, negative, and rejecting scores, and higher attributions of control. The major flaw in the authors' conclusions was to interpret these higher (or lower) results as being opposite to each other. For example, they concluded that the PD patients "were seen as being in control of their debts and suicidal urges", but this did not in fact occur. PD patients were only attributed less dyscontrol than the other patients. On a scale of 1–6, the PD patients obtained a mean score of 3.48, significantly higher than the 3.18 for the other patients. However, 3.48 is only 0.30 higher than 3.18, and it is in the same direction (i.e. below the midpoint). If a score of 3.18 on a 6-point scale suggests dyscontrol, then so would a score of 3.48 (although somewhat less dyscontrol). Consider as a comparison a scale of 1–6 that measures temperature, where 1 is hot and 6 is cold. City A has an average temperature of 3.18 and city B has an average of 3.48. This is a real difference, but not a substantial difference. The most reasonable interpretation could be that both cities are lukewarm. Interpreting Drs Lewis & Appleby's findings as suggesting that the subjects considered PD patients to be in control would be comparable to saying that city B is cold while city A is hot.

This misinterpretation of the results occurs for the other items as well. PD subjects were rated as more manipulative, less likely to arouse sympathy, more likely to annoy, and more likely to be attention-seeking, but the differences were not substantial and they were not in opposite directions. Psychiatrists might like PD patients less than other patients, but it is not the case that they dislike them, as the authors suggested in the title of the article.

The differences that did occur are in fact consistent with and support the validity of the diagnosis. Persons with personality disorders do tend to be more manipulative, attention-seeking, and annoying. Some of these traits are in fact used to make the diagnoses (American Psychiatric Association, 1987). The authors are correct in stating that "no physicist would claim that an electron was more worthwhile than a positron, [while] psychiatrists appear to prefer one diagnosis to another", but this is not problematic to their validity. Physical disorders also vary in the extent to which physicians find them preferable to treat. This does not make them any less of an illness. It is also likely that some areas of research for physicists are more preferable than others. Some tasks are more rewarding, enjoyable, fulfilling, or stimulating. Personality disorders are characterised in part by a variety of socially undesirable traits that make them difficult, unpleasant, and troublesome to treat (Widiger & Frances, 1985). It is not surprising that psychiatrists find them less preferable to treat than, for example, depression.

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## HIV Screening

SIR: I do not wish to prolong unduly my correspondence on the question of screening for HIV. However, Dr Davies was sent both my and Dr O'Neill's letter before their publication, and in his reply (*Journal*, November 1988, **153**, 704) he makes further points which cannot go without comment. I disagree with his assessment of the merits and relevance of Dr Grant's letter, but will confine my comments here to the points Dr Davies himself raises.

Dr Davies' use of a 'simple binomial model' produces impressive and indeed frightening figures. However, a little epidemiological interpretation of these statistics is called for. Firstly, the estimate of risk of seroconversion after needlestick accidents used by Dr Davies is 0.5%. This is the currently estimated risk of seroconversion after a needlestick injury of HIV positive blood – this point requires emphasis as it leads directly on to the need to have an estimate of population prevalence of HIV.

Secondly, the best available population estimate of HIV prevalence in the UK is derived from voluntary blood donation screens. The UK prevalence derived from this source is 0.0016% (British Medical Journal, 1988). Using a simple probability calculation, the risk of seroconversion after needlestick injury with blood of unknown HIV status is 1 in 12.5 million. We can build assumptions into this calculation, e.g. that the prevalence of HIV in a psychiatric hospital population is, say, 100 times that in the general population; the risk from a single random needlestick injury then becomes 1 in 125 000. I do not 'dismiss' this risk, but attempt to view it in relation to, for example, the 1 in 1000 risk of a child dying before its first birthday (Office of Population Censuses and Surveys, 1986*a*) the 2 in 1000 risk of a man aged 45–54 dying of a coronary heart disease (Office of Population Censuses and Surveys, 1986*b*) and the 6–30% risk of hepatitis B seroconversion after needlestick injury with infected blood (*Population Reports*, 1986). Furthermore, using a simple binomial model it would require in excess of 85 000 events to produce a greater than 50% probability of at least one seroconversion.

I shall not follow Dr Davies' practice of confusing terms whose meanings are widely held to be different. Screening is not the same as assessment, and certainly not the same as "assessment" under the 1983 Mental Health Act. It is a pity that Dr Davies has not assimilated the cogent arguments by Dickens (1988) on the legal rights and duties of health professionals; this is surprising, as Dr Davies himself cited Dickens' article. Of equal importance are the ethical arguments for and against involuntary screening. Walters (1988), in a reasoned and eloquent article, concluded: "Mandatory screening programmes other than those involving persons who voluntarily donate blood, semen, or organs are not morally justifiable at this time". Taken together, these papers present the case for a voluntary screening programme and emphasise the essentially voluntary relationship which ought to exist between doctor and patient.

Finally, it is precisely because Dr Davies and I hold genuinely different opinions about the best approach to the problems presented by HIV infection that I cannot join with him in a trivialising of the debate – summed up in his recycled phrase "where will all this nonsense end?" In particular, there is a pressing need for anonymous screening for HIV so that better population prevalence figures are available for monitoring trends and planning services – informed debate on this and other relevant issues are not nonsense. Such debate is, in fact, an essential part of developing valid and acceptable practice and policy responses to the greatest health risk of our time.

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## Childhood and adolescent depression

SIR: I found the articles by Angold (*Journal*, May 1988, **152**, 601–617; *Journal*, October 1988, **153**, 476–492) on childhood and adolescent depression to be thoughtful and informative. However, I was somewhat surprised to see that the only reference to my work in this area was to misquote the rating scale that I developed while in Edinburgh. The scale has no reference to "wandering behaviour", although this term was included on a list of variables taken to form an operational definition for depression in childhood. As it turned out, the current RDC criteria and my operational definition are remarkably similar.

One of the major points made by Dr Angold is the importance of taking the history directly from the child, i.e. that children are generally reliable informants if they can get some help in putting their situation and feelings into words. Mood self-rating scales for children seem to be quite useful for this purpose.

Another of his important conclusions is to be careful in investigating mood phenomena in children who present with conduct disorders or who have serious psychosocial difficulties.

My work (Birleson, 1981; Birleson *et al*, 1987) would strongly support these assertions if quoted correctly.

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## Positive symptoms of schizophrenia

Sir: Frith & Done (*Journal*, October 1988, **153**, 437–443) propose that the positive symptoms of schizophrenia arise from a failure in transmission, from goal-setting areas to a central monitor, of willed intentions that form the basis of self-generated action. They suggest that when self-generated actions are noted by the monitor, but not understood as such because of failure of advanced warning of willed intention, then these actions are attributed to external events.

Such a mechanism could underlie the "permeability of the ego-world boundary" mentioned by Schneider as possibly causing passivity phenomena (Koehler, 1979). However, there is another implication of this hypothesis which is more difficult to place: to lose awareness of willed intention to an extent sufficient to cause a florid positive schizophrenia may be to lose recognition of oneself as an independent thinking being. If the central elements of a singular identity are retained in the absence of awareness of the self-generated nature of activity, then Descartes' phrase, "I think therefore I am", would need to be restated as, "I respond therefore I am". This is not a correct statement, since the ability simply to respond does not require an individual sense of consciousness.

Jaspers (1959) considered the effect of psychopathology on awareness of existence, and concluded that there are circumstances where *cognito ergo sum* is no longer a valid experience, particularly in the presence of derealisation and depersonalisation.

Such observations lead to the prediction that the more severe are the positive symptoms expressed by a schizophrenic patient, the more likely it becomes that the patient will be experiencing severe symptoms of depersonalisation or derealisation. This is generally not the case. One explanation for this would be that only the transmission of willed intentions relating to selected goals is impaired. This would account for the observation in many cases, particularly of paranoid schizophrenia, that positive symptoms are only experienced in a part of the patient's experience as a whole. The question then becomes: why is there an abnormality in this particular area of self-generated behaviour?

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Sir: Frith & Done (*Journal*, October 1988, **153**, 437–443) draw attention to the lack of a psychological theory for the positive symptoms of schizophrenia. They propose what appears to be a simplistic model to explain the phenomena of auditory hallucinations. They believe that the patient is "talking to himself" but believes the voices he is hearing are from an outside source.

What they do not consider is the form or content of auditory hallucinations commonly seen in schizophrenia. For example, how would this theory explain two voices discussing the patient, one of which may be male, the other female? This would certainly not reflect "normal psychological processes", whether or not it was labelled "my own". Similarly, the content of auditory hallucinations in paranoid schizophrenia is often abusive and derisory; our understanding of this is not advanced by the theory.

It is admirable that experimental tests of monitor failure are possible, but surely the theory must first embrace those symptoms commonly seen in clinical practice.

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## Sample Size and CT Scans in Schizophrenia

Sir: Smith *et al* (*Journal*, November 1988, **153**, 667–674) remind us that the use of high-tech research instruments such as computerised tomography (CT) often hides basic methodological flaws, such as the choice of bogus control groups. Ironically, however, the results of the authors' own elegant meta-analysis of published CT studies in schizophrenia contain the seeds for criticism of their own study: the use of sample sizes too small to test hypotheses is another much-perpetrated sin. The figures derived by Smith *et al* from previous studies show that lateral ventricular size (as measured by VBR) in schizophrenic subjects exceeds that of healthy controls by about 30%. Entering these figures and an approximation of the authors' value for overall standard deviation (±3.1) into a power analysis shows that, in order to be even 80% confident that a two-tailed test will produce a statistically significant difference, at least 60 patients and 60 controls are needed. It is not surprising, therefore, that the authors failed to demonstrate larger ventricles in schizophrenic subjects, since their sample size (30 patients, 30 controls) gave them slightly less than a 50–50 chance of doing so.

The authors should be congratulated on a genuinely informative literature review, but it is a shame they felt unable to put their own prescriptions into practice. In illuminating the devil of the Type I error they have slipped into the deep blue sea of the Type II.

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## Schizophrenia: Recency Theory and Syphilis

Sir: Hare (*Journal*, October 1988, **153**, 521–531) argued that the historical origins of schizophrenia may have parallels with that of general paresis. He described the earlier global variation in the prevalence of paresis and the more recent increase in prevalence in non-Western countries, and judged from this that the changes in prevalence were real and probably attributable to changes in an environmental factor, i.e. the introduction of a new infectious agent.

The relative rarity of syphilis, and by extension of general paresis, in West Africa before 1950 may have been related to the endemicity of yaws; the rapid increase in the incidence of syphilis since then is thought to be related to the decrease in the prevalence of yaws following the WHO mass treatment campaign of the 1950s and 1960s (Perine, 1987).

Yaws is caused by *Treponema pertenue*, which is morphologically identical to *Treponema pallidum*, the cause of venereal syphilis. The increase in venereal syphilis since the mass treatment programmes may represent a decline in herd immunity to yaws, and thereby to syphilis. This thesis is not incompatible with the notion that venereal syphilis was a new disease. Venereal syphilis may well have derived from the endemic treponematoses (unitarian theory) which include pinta, yaws, bejel, and endemic syphilis (Csonka, 1987). However, the thesis suggests that rapid alterations in prevalence, especially in this case, may be as much to do with changes in herd immunity to a related pathogen as it is to do with introduction of a new pathogen.

I agree with Dr Hare that study of the historical origins of general paresis may throw some light on the schizophrenia debate and suggest that the curious relationship between rheumatoid arthritis and schizophrenia (if true) is reminiscent of that between yaws and venereal syphilis in the African population. Both rheumatoid arthritis and schizophrenia may be caused by related but different pathogens.

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## Tactile Extinction Phenomenon in Schizophrenia

Sir: With regard to Dr Cutting's comments (*Journal*, August 1988, **153**, 281) about our interpretation of the tactile extinction phenomenon in his review of *Etiopathogenetic Hypotheses of Schizophrenia: the impact of epidemiological, biochemical and neuromorfological studies*, the direct relationship between QET and "a disorder of some sort in the right hemisphere" is so far to be univocally demonstrated. Taking the neurophysiological pathway of tactile sensitivity into account, there is clinical evidence that both right contralateral and left frontal cerebral lesions cause a left-extinction phenomenon (Schwartz *et al*, 1977).

Attempts to clarify which of these (left homolateral or right contralateral) is responsible for our results have not given consistent results. Even if a neuropsychological interpretation of the QET suggests that left-extinguishing patients performed worse in right-hemisphere tasks (Gambini *et al*, 1986) the interpretation of these results still are not definitive. In fact, QET can be considered to be similar to other dichotic tasks (e.g. dichotic listening and, in general, simultaneous stimulations of the left and right sensorial pathways). Therefore, as Schwartz *et al* (1977, 1979) pointed out, it is reasonable to suggest that when a verbal response is needed, as in the QET paradigm, the two sensorial tactile pathways are quite different; in fact, the left-side stimulus has a longer indirect pathway to CNS in comparison with the stimulus from the right hand, which arrives directly to the left hemisphere. The longer way for the left-side stimulus includes fibres crossing from the right to the left hemisphere mainly through the anterior part of the corpus callosum. Thus it might be reasonably hypothesised that the tactile extinction phenomenon in schizophrenia might also depend on transcallosal pathway deficits.

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## Violent Incidents in Special Hospitals

Sir: We read with interest the paper by Larkin *et al* (*Journal*, August 1988, **153**, 226–231). Results from our own investigation of violent incidents over a 12-month period at another Special Hospital (Park Lane) agree in some respects, but differ substantially in others.

In common with Dr Larkin *et al*, we did not confirm previous findings of increased frequency of violence at mealtimes (Dietz & Rada, 1982; Hodgkinson *et al*, 1985; Pearson *et al*, 1986). We also agree in that incidents generally took place in ward areas. Our study did not find a significantly greater number of incidents on Monday and Friday as did theirs. In our study, 59% of incidents occurred spontaneously, in contrast to their figure of 85%. Our finding that staff and patients are equally likely to be targets of assault differs from their results, which indicate that nursing staff were three times more likely to be the victim of assault than the other patients. Park Lane has no female patients, and we are not able to comment on their finding that female patients were responsible for a disproportionate number of assaults.

Reasons for our differing findings may be found in the differing patient populations between the two hospitals – Rampton caters for all four of the categories of disorder in the Mental Health Act, whereas Park Lane only has mentally ill or psychopathic patients, of a level of intelligence within the normal range. Additionally, our study within Park Lane related almost exclusively to those patients with chronic mental illness.

Finally, our most striking finding was that of a marked seasonal variation in incidents, with significantly increased frequency of assault in the winter months. We postulate an important seasonal variation whereby increased population density in indoor areas, during cold and dark winter months, leads to increased levels of extrapunitive violence. Larkin *et al* report on incidents between May and September, the period when we recorded fewest incidents, and do not comment on a seasonal trend. In view of this, it may be that their calculation of an incident rate for the whole year may be seriously underestimated.

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## Capgras' Syndrome

Sir: Dr Anderson's intriguing case report (*Journal*, November 1988, **153**, 694–699) adds more weight, if such were needed, to the notion that delusional misidentification syndromes can be said always to signal the presence of cerebral pathology. By my calculation, 21 of the 23 cases of Capgras' syndrome now reported with neuroimaging data have shown focal or diffuse abnormalities: an impressive score even allowing for publication bias. One small caveat, which Dr Anderson acknowledges, is that the case he describes is not classically a Capgras delusion. Previous authors have included the 'delusion of inanimate doubles' within that sublime group of neurological disorders called the reduplicative paramnesias (Weinstein, 1969). However, such fine distinctions are mainly in the eye of the beholder, be he psychiatrist or neurologist. The underlying mechanism offered by Dr Anderson, that of a lesion somewhere between visual and limbic cortices causing visual images to become dissociated from the affective memories previously associated with them, may well be applicable to both sorts of disorder. This mechanism has certainly been suggested previously in attempts to explain Capgras' syndrome (Lewis, 1987) and reduplicative paramnesia (Staton *et al*, 1982).

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SIR: I was fascinated to read Dr Anderson's paper on the delusion of inanimate doubles (*Journal*, November 1988, **153**, 694–699) and its implications for Capgras symptoms. Dr Anderson suggests that the delusion of doubles for objects rather than people is a logical extension of the Capgras phenomenon, in the same way that the term prosopopagnosia has seemingly been extended to include rooms, buildings, and objects. There are two corollaries to this suggestion.

If the Capgras syndrome is more common than is suggested by the number of published case reports, then by extending it to cover the delusional misidentification of objects, it must be even more commonplace. I tentatively suggest that the majority of these cases must occur within the context of 'functional' illness. I have seen two cases which would fulfil Dr Anderson's criteria, both within the setting of paranoid schizophrenia.

*Case reports: (i).* A spinster of 74 first became ill at the age of 59, with a psychosis characterised by second-person auditory hallucinations and persecutory delusions. She is now maintained on injections of modecate. Living alone in a seaside bungalow with her elderly dog, she occasionally lapses into illness. She becomes acutely suspicious of neighbours and friends living in her road. She then rings the local police station to tell them that while she has been asleep these neighbours have been going through her belongings. She asserts that although her prized art book collection and paintings are still in the bungalow, and appear identical, they have been meticulously faked and replaced.

*(ii)* A widow of 55, again living alone, and with a diagnosis of paranoid schizophrenia, has become estranged from her family. In relapse she alleges that they persecute her, although the truth is somewhat the reverse of this. The widow sends them angry letters and plagues the police with unfounded accusations against them. When she is admitted to hospital she frets about her empty flat. After some leave at home she complained on return that her brother had been in her flat while she had been in hospital. She knew this because he had replaced a wardrobe and a chest of drawers with identical items, but that these lacked various marks of wear and tear that the originals had borne. She was convinced that her brother had gained access with her own keys, having stolen them from her while she was in hospital, after leaving a replica set in their place.

Neither of these patients admit to these ideas when well, and neither have any identified organic neurological disease. The delusion of inanimate doubles may thus be an intrinsic part of an elaborate delusional system in some cases of paranoid schizophrenia. The pure Capgras syndrome seems mainly to occur in 'functional' illness, in the absence of lesions detectable by computerised tomography imaging (Green, 1988; Green & Birchall, 1988).

Although macroscopic brain lesions do appear to account for a few cases of the delusion of doubles, the aetiology of the Capgras phenomenon seems to be rather wider than this, and it seems that we must not rely solely upon either a psychodynamic or organic explanation.

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## Parasuicide in Young Asian Women

SIR: We were interested in the paper by Manium (*Journal*, August 1988, **153**, 222–225), which, like the paper by Merrill & Owens (1986), drew attention to the high parasuicide rate of young Asian women.

We analysed the attendances of patients aged 10–24 presenting with self-poisoning to the two casualty departments of The London Hospital during the years 1980–1984. This hospital serves an area with a large Bangladeshi population.

We used figures derived from the 1981 census and from ILEA statistics to estimate the proportion of the Tower Hamlets population in these age groups that were of Asian origin, and compared Asian and non-Asian self-poisoners. We found no significant difference in the proportion of male Asians in the age group 10–24 who made parasuicide attempts; nor did we find an excess of Asian female patients in the age groups 10–14 and 20–24. However, of the 156 women aged 15–19 who presented with self-poisoning, 25 (16%) were Asian. Asians constituted only 7% of the female population in this age range, so this represents a significant excess ($P < 0.005$).

Merrill & Owens (1986) suggested that unmarried adolescent girls face culture conflict around family discord over Asian versus Western lifestyles. Dr Manium draws attention to parents' disapproval of marriage in the predominantly Muslim population of his study, which can lead to conflicts in both these areas.

In contrast to the Malay study, where there was a high rate of suicide, there were no reported suicides of Asians aged 10–24 from North East London between 1980 and 1984.

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### Castration and the Sexual Offender

SIR: Salzmann (*Journal*, August 1988, **153**, 270) recommends castration (orchidectomy) of persistent sexual offenders. His paradigm is "the Danish approach". He writes that "castration [is] voluntarily accepted by many inmates in Herstedvester as the price of release from indefinite detention". In that Dr Salzmann is wrong.

Due to fierce opposition within the public and the Danish Medico-Forensic Council, orchidectomy was abandoned in 1968. This procedure is an absolutely unthinkable approach to the sexual offender in Denmark today!

Currently, castration is only performed on a small number of transsexuals (2–3 men a year), this being a completely different issue.

On another note, we should add that the legal sanction "indefinite detention" within a treatment and rehabilitation perspective as epitomised by th Herstedvester model was rescinded in 1973.

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### Melatonin and Sulphatoxymelatonin in Eating Disorder Patients

SIR: We read with interest the report by Bearn *et a* (*Journal*, March 1988, **152**, 372–376), in which urinary sulphatoxymelatonin (aMT6s) excretion was compared in underweight and weight-restored patients with anorexia nervosa and in age-matched female controls. No significant differences were found between groups at any time, and the authors concluded that melatonin output, as assessed by aMT6s, was not influenced by changes in weight, although they did not directly assess plasma melatonin levels, or consider the relative influence of depression within the patient group.

We have recently completed a comparative study involving both nocturnal serum melatonin and urinary aMT6s in female patients with anorexia nervosa ($n = 15$), bulimia nervosa ($n = 9$) and in control women ($n = 10$) of similar age. All groups were compared according to weight and mood variables. Patients with anorexia nervosa had a significantly lower percentage of ideal body weight (76.4% ± 9.9%) than bulimia nervosa patients (102.1% ± 12.3%) and controls (105.2% ± 14.2%) ($F = 22.2$, d.f. $= 33$, $P < 0.001$). Both patient groups had significantly higher depression scores on the Hamilton Rating Scale for Depression (HRSD) (Hamilton, 1967) (for anorexia nervosa patients 19.8 ± 9.6; for bulimia nervosa patients 16.4 ± 8.4) compared with the control group (2.7 ± 2.6) ($F = 14.9$, d.f. $= 33$, $P < 0.001$).

There were no differences between patient groups and controls in night-time values of urinary aMT6s or serum melatonin values. A two-way analysis of variance for both urinary and serum results was carried out to examine the effects of weight and depression as independent variables among patients. Although weight did not influence either of these measures, a significant effect was found for depression. Patients who met DSM–III–R diagnostic criteria for major depression (American Psychiatric Association, 1987) and had HRSD scores equal to or higher than 17 had significantly lower melatonin output than the non-depressed group for both serum melatonin ($F = 4.22$, d.f. $= 1$, $P < 0.05$), and urinary aMT6s ($F = 6.51$, d.f. $= 1$, $P < 0.02$).

These findings support previous reports in which reduced nocturnal melatonin has been observed in major depression, particularly of the melancholic subtype (Brown *et al*, 1985; Claustrat *et al*, 1984). We therefore agree that urinary aMT6s is a practical index of melatonin output from the pineal gland and, like serum melatonin, does not appear to be increased in patients with anorexia nervosa at low weight.

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## Lithium-Induced Paranoid Hallucinatory State

Sir: *Case Report.* A 38-year-old man with a history of manic depressive illness was admitted in a manic phase in July 1988. He was hyperactive, garrulous, aggressive, disinhibited, showed thought pressure, and was exposing himself. However, he had no perceptual disturbance or paranoid ideas. His sensorium was clear. Administration of haloperidol and chlorpromazine in high doses was ineffective, and caused intolerable sedation and extrapyramidal symptoms; neuroleptic medications were therefore discontinued. The patient was then given lithium carbonate (500 mg t.d.s.) and his blood lithium level was maintained at 0.45 mmol/l. This medication appeared to be well tolerated and improved his mood and behaviour, but unfortunately he experienced paranoid ideas towards the staff, became disorientated, and had visual and auditory hallucinations. He was convinced that he heard people telling him to do things and go to places such as shops. He was also convinced that he saw his brother speaking to the staff when, in fact, he never visited the ward. He came out of his room naked and alleged that someone had taken away his clothing. His paranoid ideas and hallucinations were most prominent at night and in the morning at the transition between sleep and wakefulness. His biochemical investigations and EEG revealed no abnormality. His lithium therapy was discontinued, and this resulted in complete abatement of the paranoid ideas and the hallucinations within 24 hours. His mood was then stabilised on carbamazepine, and he remained symptom-free on carbamazepine (100 mg b.d.) at follow-up some four months later.

It has been reported that certain individuals may be more vulnerable to the neurotoxic effects of lithium; in such cases psychotic manifestation can occur, even at therapeutic blood levels (Reynolds *et al*, 1982). My case highlights the uncommon lithium-induced psychotic phenomenon, which is probably due to the interaction of lithium and endogenous opioid systems. However, it appears to be a transitory reaction which has complete recovery at the discontinuation of the offending agent.

Sandyk & Gillman (1985) reported a case of lithium-induced visual hallucinations. Furthermore, it has been shown that lithium may interact with opioid receptors to produce increased activity of the endogenous opioid system (Stengaard-Pedersen & Schou, 1982). Increased activity of the endogenous opioid system has been linked to psychotic behaviour, including hallucinations (Berger *et al*, 1982).

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## Prediction of Outcome After Treatment for Stuttering

Sir: Knowledge of variables that predict treatment success with adult stutterers is of utmost importance because of their strong tendency to relapse after therapy (Boberg, 1981). Consequently, Andrews & Craig's report (*Journal*, August 1988, **153**, 236–240) is extremely interesting because it claims to have identified three treatment goals (stutter-free speech, normal communication attitudes, and an internalised locus of control) that predict long-term success following stuttering therapy. However, we have serious reservations concerning the validity of their predictors.

Firstly, treatment success was assumed when clients were speaking with a frequency of stuttering as high as 2% of syllables uttered during a telephone call made in the clinic to a stranger 10–18 months "after treatment concluded". It is generally accepted that stuttering treatment success can only be determined through multiple assessments over time in a variety of beyond-clinic conditions using evaluations of speech performance and speech quality (Bloodstein, 1987). Drs Andrews & Craig's criteria do not begin to approach this standard. The inclusion of up to 2% syllables stuttered, for instance, is not only incongruous with a successful treatment criterion (individuals may even require treatment for this level of stuttering), but it is also absolutely incompatible with their claim that those who met this criterion were "fluent" (see Table II of their paper).

Secondly, the authors claim that a single within-clinic telephone call has been "shown to be a valid and reliable measure of treatment outcome (Andrews & Craig, 1982)", yet their 1982 report makes no such claim at all. Such a claim would be quite difficult to justify, because the disorder is renowned for its variability across speaking situations (Bloodstein, 1987). The problem with the external validity of this task is magnified because their therapy actually trained this particular task in clinic conditions (see Andrews *et al*, 1987) but did not evaluate it outside of those conditions.

Thirdly, Andrews and his colleagues have indicated elsewhere (see Andrews *et al*, 1987) that many of their clients participate in self-help groups after formal treatment ceases in order to regularly practice their 'fluency skills'. If these subjects also participated in these groups then, arguably, treatment actually continued through to the point of "outcome" evaluation. Since the number of subjects engaged in these regular speech practice programmes was not indicated, it is possible that the "successful group" simply contained more members of these groups.

Fourthly, recent evidence demonstrates that clients' responses to the communication attitudes scale used in this study are largely based on the clients' current speech behaviour rather than their communication attitudes (Ulliana & Ingham, 1984). This factor may also operate in the clients' responses to the locus of control behaviour scale (Ingham, 1989). Consequently, it is entirely possible that the three treatment goals predicted "successful treatment" outcome because they yielded more speech performance information and not, as Drs Andrews & Craig claim, data on attitudes or perceived source of control.

Finally, a number of authorities have argued that a clinically valid outcome evaluation not only requires adequate beyond-clinic sampling but also appropriate measurement tools (Bloodstein, 1987; Boberg, 1981). Because Drs Andrews & Craig's therapy programme may ultimately produce speech that is unnatural sounding, it is now recognised that this type of therapy needs to incorporate evaluations for speech quality and is compromised if it does not (Bloodstein, 1987). For all of these reasons we believe that Drs Andrews & Craig's predictors of successful outcome have dubious experimental and clinical validity.

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## Conversion Disorders and ECT

SIR: Dabholkar (*Journal*, August 1988, **153**, 246–247) reported that a 20-year-old male patient developed hysterical catatonia on two separate occasions following the accidental death of his father, and after villagers threatened to burn his house down, respectively. On the first occasion, his hysterical catatonia (and other conversion symptoms) were successfully treated with ECT, oral haloperidol (up to 5 mg per day), and "benzodiazepines and antidepressants in low dosage". Five months later (during which time the patient discontinued his medications), the patient re-developed hysterical catatonia, which was successfully treated with ECT and "oral diazepam in low dose". Dr Dabholkar raised the question of whether catatonia in itself is an indication for ECT. We hypothesise that ECT (or antidepressant medication) will be effective in treating hysterical catatonia and other conversion disorders only in cases where the conversion symptom serves as the 'masked' expression of an underlying depression (cf. Fisch, 1987).

In this regard, it should be noted that psychogenic pain disorders have been successfully treated with antidepressant medication (Walsh, 1983), and that electrically or chemically induced seizures have been successfully used in the treatment of "bizarre psychogenic movements" (Edwards, 1968), and in the treatment of psychogenic amnesia (Daniel & Crovitz, 1986).

In the case reported by Dr Dabholkar, it is plausible that the conversion symptoms may have served as an alternative to a major depressive episode; in other cases (Daniel & Crovitz, 1986) the development of conversion symptoms may even have served as an alternative to suicide. Since ECT has known anti-depressive efficacy (Gregory *et al*, 1985), its utilisation or an adequate trial of antidepressant medication may eliminate conversion disorders which have a depressive aetiology.

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## Before Mrs Thatcher?

Sir: The Survey Psychiatric Assessment Schedule (SPAS, section 1), as described by Bond *et al* (1980), asks the subject who was the Prime Minister before the current Prime Minister, counting this as one item of twelve in the assessment of cognitive disorder. We wondered, given Mrs Thatcher's 9 years of office, whether this question is now appropriate.

To assess this, we randomly asked 50 members of hospital staff (age range 18–65) who the Prime Minister previous to Mrs Thatcher was. The results were that of the 50 people asked, only 24 answered correctly, i.e. 52% of a presumably cognitively unimpaired population were unable to answer this question.

We would therefore suggest that this item of information is no longer appropriate for use in psychometric assessment.

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## Lipid-Lowering Drugs

Sir: There have been two large studies in which drugs have been used to alter the concentration of various lipoprotein components in blood. Cholestyramine, a non-absorbable sequestrate of bile acid, effectively lowers low-density lipoprotein (LDL); similarly gemfibrizol, a drug related to clofibrate, elevates high-density lipoprotein (HDL) and reduces LDL. It appears that there is a causal link between increased LDL and coronary heart disease, whereas raised HDL does not increase the incidence of coronary disease and may even have a protective effect.

In 1987 the Helsinki Heart Study (Frick *et al*, 1987), a prospective study of 4000 healthy men, showed that treatment with gemfibrizol produced a significant reduction of mortality from cardiac death compared with a placebo group. Similar results were observed with cholestyramine in the American Lipid Research Clinics Coronary Primary Prevention Trial (Lipid Research Clinical Program, 1984).

What is interesting is that in both studies the total death rates for the treated and untreated groups were not significantly different. This was accounted for by the fact that in the treatment groups in both studies there was an increased number of deaths caused by violence, accidents, suicide, or intracranial haemorrhage. In the Helsinki study 33% of the patients who died in the treatment group died from accidents, violence, or intracranial haemorrhage, as opposed to

12% of patients in the non-treatment group. In the Lipid Research Clinical Program study of the patients who died, 30% of those receiving treatment died violent deaths – accident, suicide, or murder – as opposed to 14% in the control group.

Lipids comprise about half the dry matter of the brain; the axon, the myelin sheath, and the synaptosomal membrane all having different proportions of lipid constituents; synoptic vesicles have a relatively high content of phospholipids. It is reasonable to assume, therefore, that anything which upsets the balance of cerebral lipid metabolism could have profound effects on the brain function. Several abnormalities of enzymes required for normal lipid metabolism are known to result in severe mental subnormality, e.g. deficiency of sphingomyelinase results in Niemann Pick disease. Disruption of the structure of the synaptic membrane or synaptic vesicles could disrupt normal function.

It is tempting to speculate how lipid-lowering drugs could affect the brain: cerebral lipids are synthesised in the brain from water-soluble precursors. Any alteration in peripheral lipid ratios are unlikely therefore to affect brain lipid metabolism. A direct effect of the drug itself in the brain could be postulated; however, cholestyramine is not absorbed from the gut. Gemfibrizol is absorbed, although its ability to cross the blood-brain barrier has not been established.

In both studies these results were interpreted as being a chance finding. We find these results most interesting and raise the question as to whether alteration of the ratio of HDL:LDL could be important psychiatrically.

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## Tea and Antipsychotics

SIR: Silverstone *et al* (*Journal*, August 1988, **153**, 214–217) suggest that obesity in patients on long-term depot antipsychotics is most likely due to an increase in food intake brought about as a result of a drug-induced stimulant effect on appetite. There may be a possible alternative explanation for this weight gain, the clues to which lie in the patient's consumption of drinks. All antipsychotic medication has quite marked anticholinergic effects and, in particular, produces dry mouth. This leads to an increased consumption of drinks and, in particular, of the favourite British beverage of tea which is often taken with sugar. Simply drinking five more cups of tea per day would lead to an increased intake of 150 calories per day if milk and one sugar were taken. This net increase in calories would lead to an intake of 1050 calories per week, which could explain some of the weight gain. It only requires 7700 calories intake in excess of a balanced state in order to gain 1 kg in weight. On these calculations, 1 kg in weight would be gained every eight weeks. In addition, this effect would be accelerated because of the decreased activity which is one of the (often desired) effects of antipsychotic medication.

I have certainly observed this phenomenon of increased tea consumption in patients on lithium, and wonder whether this may be the underlying mechanism of weight gain with antipsychotics.

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## A HUNDRED YEARS AGO

### Inebriate Criminal Responsibility

A lecture on Inebriate Criminal Responsibility was delivered to the Society for the Study of Inebriety, at the rooms of the Medical Society of London, on Tuesday last, by the President, Dr Norman Kerr.

The lecturer reviewed the varying criminal procedure of different countries in criminal cases complicated with inebriety. Germany, Italy, and Switzerland recognised a culpable and inculpable intoxication; America, England, and France did not. Yet in America the confirmed was practically dealt with as a diseased drunkard, and capital punishment was averted by a verdict of "murder of the second degree". In England, Plowden in the sixteenth century, and Mansfield in the eighteenth century, laid down that drunkenness was no excuse; while Coke went further, and held it to be an aggravation. Since then the rulings had been somewhat contradictory. All our previous criminal proceedings had been founded on our former ignorance of any pathological state preceding intoxication. But the comparatively recent revelation of modern scientific research, that drunkenness was often the effect of disease, had not been without influence on the administration of justice. There had been a number of acquittals in charges of murder during an attack of delirium tremens, and there was a growing disposition in both judge and jury to accept a delusion of this disease as a valid plea for irresponsibility. A general ruling to this effect would be a desideratum. Many drinkers could not limit their potations. Some were born with a predisposition to intoxication, others with a defective inhibitory power. Such should not be judged by the same standard as those thoroughly sound in body and brain. When drunkenness was but a symptom of insanity, or when permanent insanity was caused by drink, all admitted irresponsibility. But when there was short-lived insanity from alcohol, why should there be responsibility any more than in temporary insanity from any other cause? Dr Kerr suggested a mixed commission of medical and legal experts, and held that in criminal cases complicated with inebriety there should be an investigation of the health history and heredity of the accused.

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*Researched by Henry Rollin, Emeritus Consultant Psychiatrist, Horton Hospital, Surrey*

*British Journal of Psychiatry* (1989), **154**, 278–285

# *Book Reviews*

Editor: Sidney Crown

**Cognitive Psychology and Emotional Disorders.** By J. Mark G. Williams, Fraser N. Watts, Colin McLeod and Andrew Mathews. Chichester: Wiley. 1988. 226 pp. £24.95.

Based on the emerging pattern of results from experiments into the way the non-conscious and conscious mind responds to external and internal stimuli, this book aims to outline the independent types of information processing associated with anxiety and depression and to provide the foundations of an explanatory model of these disorders. In doing this, the authors provide an extremely thorough review of research conducted in areas such as selective attention, encoding, and retrieval. The chapters describe the cognitive approach to emotional disorders, the nature of the information processing paradigm, cognitive impairment, the way the brain responds to emotionally valent information, the operation of attentional and memory biases, schema theory, the role of thoughts of images, the means by which judgements are made, and the role of non-conscious processes. The final chapter provides a theoretical overview, offers the basis of an integrated model, and considers therapeutic implications.

The authors believe there is sufficient evidence to go beyond general statements about the effects of mood on cognitive processing and present a model which includes state and trait characteristics and which "accounts for the current pattern of findings regarding differences between general anxiety and depressive states by suggesting that anxiety preferentially affects the passive, automatic aspects of encoding and retrieval, whereas depression preferentially affects the more active, effortful aspects of encoding and retrieval". Since there is a strong probability that non-conscious processes are of a different order and not accessible to conscious awareness, the authors also conclude that although the individual may become more aware of the way biases exert an influence, to date there is little evidence to show that therapy can influence non-conscious processing biases. Despite this, therapy may successfully offer a means for emotional processing which has become impeded through a non-conscious bias. For example, since phobics appear to encode impoverished detail about feared stimuli and have a restricted elaboration of coping strategies, treatment could focus productively on training individuals consciously to encode phobic details in a way which would lead to extinction and help them acquire coping strategies.

Very few books become classics, but this is likely to be one of them. Its value lies in the systematic attempt to develop a cognitive model of emotional disorders by building from a solid foundation of sound empirical data. As such, it creates an important bridge between academic and clinical psychology. Very few gaps are left in the areas covered. The only minor criticism is that in covering thoughts and images in relation to emotions the book does not include any reference to the role of dreams in an information-processing model. This is a well-researched field, and there is evidence that more active or vivid dreaming is associated with cognitive shifts and emotional processing.

Although the book may be difficult for non-psychologists, it should be recommended reading for psychiatrists and psychologists in training and for any therapist interested in broadening his or her personal constructs about the underlying nature of the cognitive therapy model.

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**Biological Psychiatry.** By Michael R. Trimble. Chichester: John Wiley. 1988. 494 pp. £42.50.

Biological psychiatry is a rapidly expanding and developing body of knowledge which has revolutionised our understanding of most of the major psychiatric disorders. Nevertheless, many clinicians are curiously reluctant to identify themselves as biological psychiatrists, even when employing biological paradigms in their practice. Trimble shows no such diffidence, and nails his colours to the mast in a robust preface. Psychiatry is seen as firmly rooted in medicine, and psychoanalysis and related movements are dismissed as "psychological theorising which arose on the neo-romantic tide of the turn of the century". Despair is expressed at the possibility that "recent gains will become submerged and lost in a quagmire of new, old or revived psychological theorising". Not for this author any doubts about limits to biological psychiatry's usefulness in clinical practice, or that it might have its own lunatic fringe.

Such a beginning presages a forthright, clear-cut exposition with a minimum of equivocation, and Trimble does not disappoint. An initial historical review regrets, with good reason, the modern divide between psychiatry and neurology, and the rest of the book demonstrates its absurdity. The next chapter, 'Concepts of disease and classification', enunciates clearly the principles of taxonomy and describes modern classificatory systems. Jaspers' ideas are quoted with approval, although the philosophical problems of his notions of causality are ignored.

Chapters 3 and 4 cover brain anatomy, physiology, and chemistry, and much intricate material is presented lucidly and economically. Chapter 5, on investigations, is particularly useful for its relatively simple, non-technical description of the new imaging techniques such as magnetic resonance imaging and positron emission tomography. Chapter 6, 'Disorders of the limbic system', discusses some of the interesting psychopathological associations of infective, neoplastic, and degenerative lesions effecting this brain region, although subcortical dementia is notably absent.

Chapter 7, on personality disorders and the neuroses, is an unusual one for this setting, but a surprising amount of information is reviewed. Chapters 8 and 9 follow the well-trodden pathways of the biology of schizophrenia and affective disorders.

As might be expected, the chapter on epilepsy is both comprehensive and authoritative, and the particular importance of epileptic psychoses is emphasised. Chapter 11 covers the dementias, and the final chapter reviews biological treatments, with most space devoted to psychopharmacology.

This text is a masterpiece of compression, and its clarity is enhanced by tables, lists, line drawings, and prints. Two pages devoted to pictures of examples of epileptic hypergraphia is, however, excessive. There are also a number of irritating misspellings, particularly of names. Nevertheless, this is a most valuable short text on biological psychiatry, with an accent on neuropsychiatry, and one which is up-to-date, with many 1987 references cited. It will be particularly useful for exam candidates, but their seniors will also find it a handy reference work.

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**Helping Families: Systems, Residential and Agency Responsibility.** By PETER BRUGGEN and CHARLES O'BRIEN. London: Faber & Faber. 1987. 239 pp. £6.95.

Had I not been reviewing this book, I would not have read past chapter 2. The initial style and frequent intrusion of the authors' personalities did nothing to make me warm to their cause. However, perseverance in this case pays off. The remainder of the book is a much more straightforward and accessible presentation of the authors' theories about and experiences of working in caring institutions, and how these can best help their clients. Unfortunately, the last chapter ends by lapsing back to the opening style in a way which detracts from the serious message which they are trying to put across.

The material is presented as a mixture of pure theory, clinical example, and personal experience, and satisfactorily explains how the authors' ideas evolved and are put into practice. For those working in a family therapy setting, this book is unlikely to say anything completely new. However, it does help to focus on some of the potential pitfalls which can hinder successful therapy and lead to dissatisfaction and frustration for all concerned. Those most likely to gain from reading it are staff who work in an institutional setting, or who consult to such. This book should certainly provide a stimulus to readers to look at how their own institutions function, particularly the processes of decision-making and sharing out of responsibility.

This is an inexpensive, well-produced book which is very readable and provided with an excellent reference section at the end. The text itself is usefully cross-referenced between chapters. The ideas presented could usefully be incorporated into the practice of many institutions, but could just as easily apply over a much wider spectrum of practice.

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**The Alcohol Clinical Index: Strategies for Identifying Patients with Alcohol Problems.** By HARVEY A. SKINNER and STEPHEN HOLT. Toronto: Addiction Research Foundation. 1987. 31 pp. $9.75.

**Inventory of Drinking Situations: Users Guide.** By HELEN M. ANNIS, J. MARTIN GRAHAM and CHRISTINE S. DAVIS. Toronto: Addiction Research Foundation. 1987. 53 pp. $25.00.

Awareness has grown that medical and nursing personnel have contact with individuals at an early stage in the development of a drinking problem. This may be in a general medical service, an accident or orthopaedic service, a psychiatric service, or in general practice. Preliminary research indicates that some individuals may respond well to brief counselling at this stage. Skinner & Holt provide a practical set of guidelines useful to the practising clinician on the identification of those with early as well as advancing alcohol problems. The booklet they have produced describes the sort of clinical information that it is useful to obtain, signs at examination, the use of blood tests, and several short questionnaires which they have validated. Psychiatrists working in general hospitals would find this guide useful, particularly if they plan to increase the awareness of their general medical colleagues to the usefulness of early detection of problem drinkers in the general hospital. For researchers in this area, the booklet is a useful summary of Skinner & Holt's work.

*The Inventory of Drinking Situations* is a set of 100 questionnaire items designed to assess situations in which a client attending an Alcohol Problems Clinic drank heavily during the previous year. Drinking situations are divided into two major classes: (a) personal states, in which drinking involves a response to an event that is primarily psychological or physical in nature; and (b) situations involving other people, in which a significant influence of another individual is involved. Thus, unpleasant emotions, physical discomforts, pleasant emotions, conflicts, social pressure, and other common cues implicated in relapse are covered. An analysis of the findings would enable an Alcohol Problems Clinic worker and his client to concentrate on the most critical areas in which relapse is likely and derive strategies and responses for coping with those situations without drinking. An IBM-compatible computer would run the same program and present a print-out for the patient, as well as providing him with a coloured diagrammatic summary of his answers on a screen.

This work systematises what a number of behaviourally-oriented clinical units are attempting at present. I would think that the computerised program would work well – we know from other work that problem drinkers respond well to interacting with personal computers about their symptoms. (No price is given for the computer program itself. The address of the Addiction Research Foundation is 33 Russell Street, Toronto, Ontario, Canada M5S 2S1, telephone (416) 595-6000.)

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**The Year Book of Psychiatry and Applied Mental Health.** Edited by D. X. FREEMAN, R. S. LOURIE, H. Y. METZLER, J. A. TALBOTT & H. WEINER. London: London Year Book Medical Publishers Inc. 1988. 499 pp. £34.00.

This is an interesting book! A rather pedestrian cover gives little hint of the juicy morsels that lie within. This volume, one of a series of 37 covering the various branches of medicine, is a compendium of the more noteworthy psychiatric papers culled from over 100 journals published in 1985, 1986, and 1987. It covers a wide range of topics, from clinical and biological psychiatry to psychotherapy, mental retardation, child psychiatry, and forensic psychiatry. Each section starts with an introduction by one of the editors, specifying major advances in that particular field over the period reviewed. Each paper is then briefly summarised, and in many cases the section is supplemented by an editorial comment, often more cogent than the summary itself.

From such a vast array of material it is difficult to select particular papers. However, guided by my admittedly selective inclinations, I paid especial interest to the following pieces. Swedish work confirmed a high suicide rate among physicians (and psychiatrists) compared with other groups. A family study from Alberta cast doubt on the portmanteau concept of major depression, and in another study unipolar depression was found to be heterogeneous. An investigation of depression showed placebo response common among non-endogenous depressives and non-response among endogenous depressives. Doubt was cast on the concepts of 'positive' and 'negative' types of schizophrenia and their putative linkage to brain ventricular size. Bilateral electrode placement and sine wave current were found to be superior to unilateral and brief pulse ECT respectively in the treatment of depression. The classical diurnal variations of melancholia and anxiety states were validated. Tricyclic overdosage is a great problem with no antidote; there are now 500 000 cases per annum in the USA. Other workers found lithium carbonate and carbamazepine to be equally efficacious in mania. The antidepressant effects of sleep deprivation and bright light were covered.

A minor criticism is that most studies were North American. While this may truly reflect the preponderance of American work, surely helpful results still come out of Europe?

This is an excellent reference work on recent advances for the more mature psychiatrist, and trainee psychiatrists may also find something for them, although it is somewhat formidably priced.

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**Aging and the Nervous System.** By SALVATORE GIAQUINTO. Chichester: John Wiley & Sons. 1988. 232 pp. £24.50.

This attractively produced book is a work of gerontology which attempts to cover the various biological and social aspects of normal aging, whatever that may be. There are wide-ranging literature reviews of the cellular, histological, neurochemical, radiological, neuropsychological, and electrophysiological components of aging in the nervous system. The author is an Italian neurologist whose research interests seem to have been focused on electrophysiology, but he covers all the topics in a thorough and lucid manner. No translator is mentioned, so it must be said that Giaquinto's English is not only excellent, but a great deal better than that of some native authors I have reviewed in these columns.

It is inevitable in a work aiming to cover such a large canvas that some parts are only sketched in: in particular, mental illness, psychopharmacology, and sociology. However, readers of the *Journal* should not be too concerned, since this is not intended to be a textbook of psychogeriatrics, but a discussion of gerontology research. As such it can be recommended.

It is refreshingly unusual these days to be sent a single author book to review. Even in a scholarly and scientific work such as this, the reader can gauge something of the man behind the words. Giaquinto emerges from these pages as widely read in arts and science, a humane man committed equally to research and to improving the welfare of elderly people. I should be happy to be his patient were the need to arise.

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**The New Harvard Guide to Psychiatry.** Edited by ARMAND M. NICHOLI Jr. London: Harvard University Press. 1988. 865 pp. £31.95.

This volume is the successor, 10 years on, to the highly respected *Harvard Guide to Modern Psychiatry*. It is a compendium of 36 complementary review articles of aspects of modern psychiatry by 42 distinguished contributors from or connected with the Harvard Medical School. The information that these were selected from 1800 members of the Harvard Psychiatric Department arouses a certain envy.

The contents are divided into six parts. Part 1, 'Examination and evaluation', deals with the assessment of patients and the classification of their disordered mental states. Noteworthy chapters here are 'The therapist–patient relationship' (Nicholi) and 'Classification and DSM–III–R' (Klerman). It is a sign of the times that the former devotes so much space to sexual relationships.

Part 2, 'Brain and behaviour', contains four weighty chapters by acknowledged experts: Mesulam on neuropsychiatry; Green, Money & Schildkraut on the biochemistry of affective disorders; Kety & Matthysse on genetic and biochemical aspects of schizophrenia; and Hartmann on sleep.

Part 3, 'Psychopathology', covers the usual textbook syndromes but with some additional chapters on less common topics such as 'Theories of personality' (Meissner) and eating disorders (Herzog). Chapters on defence mechanisms (Vaillant) and 'The psychodynamic basis of psychopathology' (Nemiah) emphasise the eclectic tone of the book.

Part 4, on principles of treatment and management, covers the whole spectrum from the psychotherapies through behaviour therapy, sex therapy, and chemotherapy to ECT, but not as far as psychosurgery. A final chapter on patient management (Sifneos & Greenberg) provides valuable insight into the tricks of the trade of clinical psychiatry.

Part 5, 'Special Populations', covers some important but neglected areas of clinical practice, including 'The person with chronic mental illness' (Gudeman) and 'The person confronting death' (Cassem). Both provide a rich source of advice, based on long experience, on how to manage these difficult situations, and it is gratifying to find the needs of patients' families receiving due attention. This section places the guide in a class of its own, beyond the average textbook.

Part 6. 'Psychiatry and society', deals with epidemiology (Tsuang, Tohen & Murphy), community psychiatry (Borus), and 'Psychiatry and the law' (Stone). The legal chapter is naturally concerned with the American experience, but the principles are universal.

This is an excellent volume, best suited for browsing and reference purposes. Each chapter is comprehensive and up-to-date, fully referenced, and with suggested additional reading. The style is lucid and refreshingly jargon-free, and there is a notable absence of the fashionable but destructive polarisation of the dynamic and the biological. The prevailing theme is one of scholarship in the service of clinical practice, with patients' needs at the centre of attention. It will be a useful addition to all libraries, and many individuals will also appreciate its excellent value for money.

From one stable perhaps, but a stable of thoroughbreds!

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**Beginning Child Psychiatry.** Edited by PAUL L. ADAMS and IVAN FRAS. New York: Brunner/Mazel. 1988. 620 pp. $50.00.

What should a book for beginners be like? This one starts with a chapter on interviewing and examination, outlines the major treatment options, and goes on to describe all the childhood psychiatric disorders in DSM–III–R one chapter at a time. Sections on the child as a family member, being victimised, emergencies, and professional issues complete the book. As an appendix, there is an interesting chronology of child psychiatry going back to 5000 BC! The authors have chosen to present their own clinical practice rather than review the literature (although key references are cited). This makes for a clear and coherent view of child psychiatry, albeit as practised by the authors, which, together with numerous case examples and an easy to read style, will make the book readily accessible to beginners and give them a feel for the subject.

This would be all very well in a slim, introductory volume, but this book is over 600 pages long. In choosing to go for a coherent view of clinical practice the authors have, I believe, missed opportunities to cover certain areas in more detail and glossed over other areas of controversy. This need not have been necessary in a book of such length. The lack of a separate section on aetiology means that it is discussed briefly and often repetitively in each chapter. The complex interactions between constitutional, family, and environmental factors are not given a full airing. The chapter on interviewing omits all mention of the assessment of family functioning.

This is also a very American book, and British beginners would get a false impression of current treatment methods, particularly with respect to the use of medication, on the other side of the Atlantic. In conclusion, I would not recommend this book to British beginners in child psychiatry, although I suspect it may prove popular in its country of origin.

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**Old Loyalties, New Ties: Therapeutic Strategies with Stepfamilies.** By Emily Visher and John Kilner. New York: Brunner/Mazel. 1988. 272 pp. $27.50.

This book updates and expands earlier work by the same authors. It gives a detailed account of the different phases of life in stepfamilies as these are likely to be brought to the attention of clinicians. It offers a variety of useful ways of looking at the structure of stepfamilies, the complexity of stepfamily relationships, and the emotional issues that underlie presenting problems. A number of useful diagrams are included for mapping the way in which stepfamilies and biological families connect in relation to different aspects of children's lives.

The book contains a good reference list and would be of value as a guide to stepfamily life for anyone who works with a general range of families. It is overlong, and contains many case studies which in an English setting would be unlikely to receive professional attention. It lacks case studies of any severe pathology, such as sexual abuse or persistent violence, focusing instead on the broad issues affecting stepfamilies as a whole.

As children in stepfamilies are over-represented in the population presenting to mental health settings in Britain, it is important that the organisation of stepfamily life and the features that distinguish stepfamilies from biological families become a familiar part of professional thinking. This book makes an important contribution to the development of this knowledge.

Gill Gorell Barnes, *Director for Training, Institute of Family Therapy, London*

**Stress – The Challenge to Christian Caring.** By Gaius Davies. London: Kingsway Publications. 1988. 286 pp. £6.95.

The general aim of this book would appear to be to introduce the Christian to the real, and theologically acceptable, benefits of medical help, and especially of psychiatric treatment. It is addressed to those who might feel that putting their faith in the psychiatrist and medication in the face of emotional stress and turmoil amounts to a denial of their faith in God. At the same time, the author tries carefully to respect and give full acknowledgement to the place of Christian faith in the face of the stress which is part of our human lot. The book illustrates some of the difficulties in trying to be fair to both sides, and thus leaves itself open to criticism on both sides.

Some Christians may not feel that the work is sufficiently theological in the way in which it relies heavily on the quotation of a number of selected texts. On the other hand, some psychotherapists would feel that the unconscious has not really been given its due and that psychotherapy or counselling has been dealt with in a somewhat superficial manner. Thus, in the first instance, while extolling the need for preaching as a preventive of stress it omits the fact that while there is only one sermon being preached, there are really as many sermons heard as there are people in the Church. In the second instance, what is said about therapy would appear to be linked more with behavioural therapy and learning theory than with dynamic analytical psychotherapy.

In spite of these failings, this easily readable work is a real and positive apologia which may enable many fundamental Christians to seek appropriate help in times of pathological stress.

Louis Marteau, *Director, Dympna Centre, London*

**MCQs and Short Notes in Psychiatry.** By Alistair S. Burns, Anthony S. David and Michael Farrell. London: Wright. 1988. 142 pp. £6.95.

**MCQs for Psychiatric Studies.** By Chris Freeman. London: Churchill Livingstone. 1988. 162 pp. £6.95.

There is seemingly an inexhaustible demand for multiple choice question (MCQ) books among psychiatric trainees preparing for Parts I and II of the Membership examination. These are two new additions to the fold to feed the anxiety of potential candidates.

*MCQs and Short Notes in Psychiatry* contains 180 MCQs with explanatory notes, together with 20 examples of the new-style short questions plus model answers. The latter seem useful and well constructed for revision purposes, but I found the MCQs to be at times rather too obscure or pedantic for the trainee. Many appeared to relate to the small print found in some of our more weighty tomes, and I could not help wondering if this was a result of all three authors having worked at the Institute of Psychiatry or the Maudsley Hospital.

*MCQs for Psychiatric Studies* begins with an excellent section offering advice on examination technique, which will be appreciated by many readers. However, the vast majority of the ensuing example questions and explanatory notes are for use in close conjunction with *Companion to Psychiatric Studies*, and this means that many bear little resemblance in style to typical

Membership MCQ questions. Only at the end of the book is the reader offered a standard test paper consisting of 50 questions – too few for the trainee's needs.

Both books suffer from a basic fault similar to that of many of their predecessors, in that they contain several errors involving either ambivalent questions or incorrect 'true' or 'false' answers. I attempted all the examples in both books, as did some of my colleagues, and our exasperation at the mistakes we discovered was validated by checking the established facts in a number of well-respected standard texts.

I still await the perfect MCQ book – one in which the questions are interesting and varied, and are neither too easy nor too difficult. They should be accompanied by clear explanatory notes, relevant to Membership revision and (above all) accurate! The two mentioned here do fulfil some of these criteria, but they are far from ideal.

J. J. Hart, *Senior Registrar, Department of Psychiatry, The London Hospital*

**Social Learning and Systems Approaches to Marriage and the Family.** Edited by Ray deV. Peters and Robert J. McMahon. New York: Brunner/Mazel. 1988. 325 pp. $51.00.

It is hard to pin this volume down, which should be a promising start. The promise is not fulfilled, however. This is a collection of papers, mainly in the social learning research tradition, about the study and treatment of a variety of problems in family life, such as maternal depression, marital conflict, sexual abuse, male sexual dysfunction, and handicap. The influence of systems theory is slight, although there is a bold attempt in the final chapter to marry the two traditions, or at least to see where the overlap is. The notion of 'reinforcement', for example, can easily be understood by a systems family therapist as part of the process of 'homeostasis'. The political goal of the authors of this chapter is clearly stated at the end – because behavioural and family therapies are getting less and less funding than "the more directly medically related phenomena . . . as a field we must become more coherent, more efficient, and more inclusive in our focus".

The volume as a whole does not achieve this aim. I think there is more mileage in the idea that systems therapy is the offspring of psychoanalytical and behavioural learning therapies, and the book I would like to see would include all three traditions with this evolutionary perspective in mind. The penultimate chapter, 'Comprehensive assessment of family functioning', is a useful review of the subject, and any hopeful researcher on families would be wise to read it.

Sebastian Kraemer, *Consultant Psychiatrist, Child and Family Department, Tavistock Clinic, London*

**The Human Brain.** By Paul Glees. Cambridge: Cambridge University Press. 1988. 204 pp. £32.50.

The Book Reviews Editor has asked me to consider whether this book is more useful for MRCPsych candidates than other texts already available. There are many books with similar titles – for example, Peter Nathan's excellent *The Nervous System* (Penguin). Glees states in his preface that, "Being primarily a morphologist, rooted in the concept of the evolution of structure, I have placed the emphasis on structural organisation, but functional aspects, experimental research and clinical findings have been incorporated, broadening the interests for clinical students and for students of neurobiology". He has, I believe, only partly fulfilled his task, and whether psychiatrists are an appropriate audience for this book is also, to my mind, not at all certain. There are elegant drawings of cells with dendrites with different types of arborisation, but the artwork of many of the larger-scale illustrations looks very dated. For example, the figure showing the circulation of the human brain is considerably less informative than that found in many introductory texts of human biology designed for GCSE candidates.

Intermingled with some quite complex descriptions of micro-neuroanatomy are statements which fit less comfortably into a modern text – for example, "Old age is often brought to a sudden end by a vascular catastrophe, when the hardened fragile brain vessels rupture and cause infarction (loss of blood to a given vascular bed)." Not only is this account too simplistic for those who are likely to labour through a very complex chapter on the organisation of the cerebral cortex, but the statement is also incorrect, as the pathology of infarction is quite distinct from that of cerebral haemorrhage.

The strengths of the book lie in some unusual drawings and photographs but, presumably in an attempt to keep the cost down, the paper is not of a high quality, and much electron micrographic detail is lost. The diagrams of the anatomy of the peripheral nervous system are much less clear than those in the excellent and cheap MRC publication *Aids to the investigation of peripheral nerve injuries*. I regret that I cannot recommend this book to readers of this journal.

Anthony Hopkins, *Physician in Charge, Dept of Neurological Sciences, St Bartholomew's Hospital, London*

**Parenting Breakdown – The Making and Breaking of Inter-generational Links.** By David Quinton and Michael Rutter. Aldershot: Avebury. 1988. 270 pp. £25.00.

"People who were themselves deprived in one or more ways in childhood become in turn the parents of another generation of deprived children." This observation required no greater social scientist than Sir Keith Joseph to deliver it, and as this book concerns itself with the same problem, it also reaches no new or startling conclusions. Its real value lies in the way it examines the hows and whys of that depriving cycle. The book describes a large study, complex but economical in its structure. The retrospective component looks at the childhood experiences and current functioning of 48 sets of parents who had children taken into care because of parenting breakdown. The prospective part follows up the later parenting careers of a sample of girls who were in residential care in the 1960s, and who were part of a study at that time.

The data are presented clearly in bar charts, a great help considering the complexity of the study. They are also discussed extensively in the text, and the litanies of misfortune in these deprived and depriving families make depressing reading. The outlook, of course, is not universally bad; some subjects showed remarkable resilience to adversity, while others made great improvements with the help of a supportive spouse. Where the text really comes to life is in the case histories, whether describing success or disaster, and these are a tribute to the patient and exhaustive work of the interviewers and observers.

The book is not cheap, nor is it easy to assimilate, but those who buy it will be repaid by the depth and detail of understanding it brings to an immense problem: the corrosion that eats away the building-blocks of society.

DON MCDWYER, *Consultant Child and Adolescent Psychiatrist, St Cadoc's Hospital, Caerleon, Gwent*

**The Meaning of Illness.** Edited by MARK KIDEL and SUSAN ROWE-LEETE. London: Routledge. 1988. 176 pp. £7.95.

The primary appeal of a variety of alternative medicines is in their recognition and critique of the limitations of the mind/body distinction which is central to the dominant scientific model of bio-medicine. This can prove to be empowering, with patients recovering some control over their own management. A belief that disease processes, however apparently inexorable, are subject to modification and even reversal does produce positive outcomes, both somatically and psychologically. The single worst feature, however, of alternatives which are based on models involving imbalances between forces which are not amenable to empirical scrutiny or measurement – be they spiritual, elemental, or connected to some external cosmology – is in their potential for victim blaming. Thus, Kidel in his chapter 'Illness and meaning' asserts that: "No illness happens entirely by chance.... There is evidence that the body's natural ecology (*sic*) includes most potential agents of infection. When and how we fall prey to their pathogenic power ... cannot be explained by reference to external factors or 'causes' alone."

This may or may not be true, but undue focus on individual responsibility for disease can relocate aetiology, in a negative and unhelpful way, particularly when this induces guilt in those who remain ill despite their own efforts to effect positive outcomes. When the espousal of oppositional views to bio-medicine is also journalistic, anti-science, and based on generalisations unsupported by evidence, potentially valuable alternative approaches to allopathy are unlikely to win converts. Sadly, much of this collection is written in this way, although honourable exceptions are to be found in Hill's chapter 'Health and illness in Chinese society' and Kraemer's useful contribution on family therapy. To the editors' credit, they have included a chapter which is openly critical of the approach most contributors have adopted. Guggenbuhl-Craig writes of the implicit victim-blaming of "psychosomatic moralism", and Micklem criticises the view of diseases which praises the opportunities they (selectively) bestow for personal development and improved self-knowledge, reminding the reader of the personal tragedy so often associated with serious illness. In the end, however, the search for meaning in illness in most of this collection is hampered by the exclusion of a social context to health and disease, ignoring even the role of carers in the celebration of individualistic perspectives.

GRAHAM HART, *Lecturer in Medical Sociology, Academic Department of Genito-Urinary Medicine, University College and Middlesex School of Medicine*

**Ethics and Psychiatry: Toward Professional Definition.** By ALLEN R. DYER. Washington: American Psychiatric Press (distributed in the UK by CUP). 1988. 188 pp. £35.00.

This book, although presented as a coherent whole, is in fact a collection of essays. It is not a comprehensive account of ethics and psychiatry. It is weak on traditional philosophical argument. However, within these essays there are a number of interesting insights. These mainly stem from an idea which derives from Dyer's experience as a psychotherapist, and which has important consequences for medical ethics. One of the central tenets of moral thinking is the principle of autonomy. When applied to medical ethics, this results in respecting a patient's wishes. The insight from psychotherapy is that there is no simple answer to the question of what a person's wishes are. This is not only because of conflicting conscious desires, but also because of unconscious desires and wants. It is a major aim in psychotherapy to enable patients to know their own wishes.

Dyer develops these ideas in the context of informed consent and compulsory treatment. He breaks away from the traditional analysis in terms of a conflict between autonomy and paternalism. He also looks in some detail at the ethical problems surrounding the practice of psychotherapy itself.

I would like to see Dyer develop his ideas further. They are important not only to the practice of medicine, but to any enterprise where the autonomy of individuals is of central ethical importance. In Western democracies there can be no more important such enterprise than voting at general elections. The insights of psychotherapy might tell us much about the concept of freedom in a society where the packaging of political ideas is given more importance than their content.

R. A. HOPE, *Clinical Lecturer, Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford*

## *New editions*

**Companion to Psychiatric Studies (4th edn).** Edited by R. E. KENDALL and A. K. ZEALLY. Edinburgh: Churchill Livingstone. 1988. 840 pp. £42.50.

Previous editions of the *Companion to Psychiatric Studies* have already made an impact among trainees in psychiatry. The 4th edition of this extremely well-presented and comprehensive volume had 41 chapters on a wide range of salient topics. The subject matter is relevant for both the postgraduate trainee in psychiatry and the practicing consultant psychiatrist. The latter will find it extremely difficult to discover any important area of psychiatry left uncovered in this text. As before, the editors have sought contributors who are mostly, like themselves, based in Edinburgh, but they also have distinguished contributors from other centres, and it is hard to single out chapters for special mention, since the book has such a generally high standard.

The book competes in the larger textbook field with such stalwarts as Kaplan & Saddock's *Comprehensive Textbook of Psychiatry*. The 3-volume 'Kaplan' has 3500 pages and addresses the American postgraduate, while its Synopsis (for undergraduates) has over 1000 pages! Perhaps it would be not unreasonable to expect our undergraduates on this side of the Atlantic to also read textbooks as weighty as the *Companion to Psychiatric Studies*.

The chapters cover a range of topics from historical and aetiological areas, to chapters by diagnostic category, chapters by age group, and chapters on the range of treatments in psychiatry. The orientation of the book is broadly eclectic and its general balance is a tribute to the skills of the editors, who represent both the academic and clinical sides of psychiatry. Feedback from trainees on previous editions has been excellent. My random tests of its usefulness as a reference also proved first class (e.g. one of mine was on lead encephalopathy which is nicely covered in the extensive chapter by Dewar on 'Aspects of neurochemistry and neurotoxicology').

It is possible that the book would be viewed by trainees as difficult to read from cover to cover, because both of its size and the detail with which topics are covered. Nevertheless, the 4th edition constitutes an excellent 'data bank' of knowledge in psychiatry.

Perhaps it would be unfair to criticise one aspect of this book which applies equally to most other texts. Psychiatrists write almost as observers of the passing scene, suggesting short-term remedies for illnesses or problems, but seem afraid to use their skill and knowledge assertively in planning changes in delivery of treatments or services. As an example in the *Companion*, tricyclic antidepressant toxicity and overdose is emphasised but the tactic of using safer alternatives is not endorsed. Equally, while there are chapters on epidemiology, and psychiatry in general practice, there is no suggested operational strategy for developing a real community psychiatry service. It would seem to me that such passivity invites psychiatric retrenchment and development of alternative care-giving services.

R. J. DALY, *Professor of Psychiatry, Cork Regional Hospital, Wilton, Cork, Ireland*

**Drug Treatment in Psychiatry (4th edn).** By TREVOR SILVERSTONE and PAUL TURNER. London and New York: Routledge. 1988. 282 pp. £12.95.

As my previous copy had been borrowed and not returned, it was with great pleasure that I renewed my acquaintance through this new edition. Although there have been changes, the current edition retains all that was good in the past, and I am sure will come to be a valued textbook.

The first part outlines general principles of drug therapy, including a useful review of central nervous system transmission which outlines most of the modern theories regarding the role of neurotransmitters. The second and larger part of the book outlines specific therapies for various psychiatric illnesses, including most of the more recently introduced drugs.

While the book is about drug therapy, the limitations of pharmacological interventions are discussed. The book is easy to read, and at the price is affordable to any doctor wishing to increase their knowledge of psychopharmacology. This book is likely to become essential reading for all trainees, and one that even the most experienced psychiatrist will wish to use on occasions when deciding about the use of drugs in the management of their patients.

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*Annotation*

# Monoamine Oxidase Inhibitors: Rehabilitation from Recent Research?

DAVID NUTT and PAUL GLUE

For a long time, monoamine oxidase inhibitors (MAOIs) have been the Cinderella drugs of psychopharmacy. Although they were introduced just before the tricyclic antidepressants (TCAs), they rapidly became second-line treatments. Several factors contributed to this, in particular the dietary restrictions, the scattered reports of death from overdose and/or toxic interactions, and the unfavourable reports on the efficacy of phenelzine in depression from, among others, the Medical Research Council trial (1965). For a number of years afterwards, prescription of these drugs was limited to a few enthusiasts. More recently, however, their popularity has increased owing firstly to a re-evaluation of their effectiveness in tricyclic-resistant depression and in anxiety disorders, and secondly to growing awareness of the exaggerated claims made about their dangerousness (Pare, 1985).

## Therapeutic re-evaluation and new indications

### Depression

One of the earliest reports on the antidepressant actions of MAOIs noted their effectiveness in treating atypical depression (West & Dally, 1959), and these findings have been subsequently confirmed and extended (see review by Quitkin *et al* (1979) and Nies & Robinson (1982)). In contrast to patients with endogenous or melancholic depressions, these present a range of phobic, anxious or hysterical symptoms, excessive tiredness and hypersomnia, somatic complaints, and reversal of diurnal variation in mood, sleep pattern, and energy. MAOIs appear to be more effective than TCAs in treating patients with the above symptom profiles. This has been substantiated in a number of placebo-controlled trials comparing phenelzine with imipramine (Liebowitz *et al*, 1985, 1988) and amitriptyline (Robinson *et al*, 1985), which reported that patients with atypical depression responded better and more rapidly to phenelzine. The efficacy of MAOIs in endogenous or melancholic depression is less well proven, and while it is clear that a number of such patients do respond (McGrath *et al*, 1984), it is hard to predict them from clinical profiles.

### Anxiety

In this area, as in depression, the observations of the earliest researchers have been rediscovered under the impetus of the newer diagnostic classifications of anxiety. Sargant & Dally (1962) and King (1962) both reported the value of a range of MAOIs in the treatment of anxiety disorders. Subsequent work in the UK in the 1970s (Kelly *et al*, 1970; Lipsedge *et al*, 1973; Tyrer *et al*, 1973) emphasised their value in disorders in which phobic anxiety was a major component. The resurgence of interest in phobic disorders, as redefined in DSM–III–R (American Psychiatric Association, 1987) – and especially the growing importance of panic disorder – have stimulated research interest in the USA. The original observations of Kelly *et al* (1970) that these drugs primarily reduced anxiety attacks have been well substantiated (Sheehan *et al*, 1980; Buiges & Vallejo, 1987). Although other effective drug treatments exist (e.g. TCAs, benzodiazepines), phenelzine is at least as efficacious as these, and perhaps more so (Sheehan *et al*, 1980). It has the additional advantage that, unlike TCAs, it does not seem to provoke anxiety attacks at the start of treatment. Furthermore, in contrast to the benzodiazepines, there is no good evidence of the development of tolerance, and few reports of acute withdrawal reactions (Lydiard & Ballenger, 1987; Dilsaver, 1988).

Perhaps more surprising are the accumulating reports that MAOIs are of considerable value in patients with social phobia (Liebowitz *et al*, 1985, 1986), a condition previously considered to be more appropriately treated by behavioural rather than psychopharmacological means (Marks, 1985). Thus, it appears that MAOIs have considerable anti-anxiety properties, although this effect is not immediate, and in contrast to that of the benzodiazepines, it appears gradually over several weeks of treatment. The neuropharmacological basis for this is discussed below.

### Other disorders

In comparison with depression and the anxiety disorders, little has been published on the effects of MAOIs in other psychiatric conditions. Recent reports suggest that MAOIs may be helpful in bulimia (Walsh *et al*, 1984; Kennedy *et al*, 1985), in patients with chronic pain and coexistent depression (Davidson & Raft, 1985), and in obsessive–compulsive disorder (Jenike *et al*, 1983). Finally and perhaps surprisingly, immediate benefit was seen in a group of patients with attention deficit disorder and hyperactivity treated with a range of MAOIs (Zametkin *et al*, 1985); this argues for a specific stimulant-like action of MAOIs in this condition.

## Newer MAOIs

The pharmacology of MAOIs has advanced significantly in two directions in the last 20 years. The first significant development was the separation of type A and type B monoamine oxidase (MAO) isoenzymes, and the subsequent synthesis of inhibitors selective to each. Type A MAO preferentially metabolises noradrenaline and serotonin, whereas type B has selectivity towards dopamine, and therefore is not involved in the 'cheese reaction' to dietary tyramine (Blackwell, 1963). This offered the hope that MAO-B inhibitors would be safe antidepressants (Quitkin *et al*, 1984), but unfortunately, they appear to be effective only at doses where it is likely that the specificity to MAO-B would be lost when substantial MAO-A inhibition might also occur (Sunderland *et al*, 1985). However, these findings are useful in suggesting that changes in either noradrenaline or serotonin may be responsible for the mood effects of MAOIs. There is good evidence that the prototypical MAO-A inhibitor, clorgyline, is an effective antidepressant, and at least as effective as TCAs (see Murphy *et al*, 1987). It is unclear whether it offers any advantage in terms of side-effects or therapeutic response over the presently available non-selective MAOIs, although it has been claimed to be effective even at low doses in patients with bipolar affective disorder (Robinson *et al*, 1985).

While the selective MAO-B inhibitors (pargyline, selegiline) probably have limited use in psychiatry, there is hope that they will be of benefit in conditions of dopamine deficit, such as Parkinson's disease (Schachter *et al*, 1980); deprenyl (selegiline) is presently licensed in the UK for this use.

The second major advance is in the development of short-acting (reversible) selective MAO-A inhibitors (Youdim & Finberg, 1985). These differ from previously available MAOIs, which bind irreversibly with the MAO enzyme (Singer & Salach, 1981), and which require synthesis of new enzyme to restore function. Such drugs include moclobemide and brofaromine, which appear to have antidepressant actions equivalent to those of TCAs (Larsen *et al*, 1984; Bieck & Antonin, 1988; Schiwy *et al*, 1988). They have much shorter functional half-lives than conventional MAOIs (Schoerlin *et al*, 1987), which should make them safer and easier to use. The reversible nature of their inhibition could also minimise reactivity to tyramine, since in theory, this amine could compete with the MAOI, and thus some would be metabolised in the periphery (Youdim & Finberg, 1985). Further studies are needed, however, to confirm the evidence that these new compounds have less propensity for potentiation of tyramine (Korn *et al*, 1984) and to investigate whether they are as effective as conventional MAOIs in treating tricyclic-resistant cases of depression.

The potential for a third significant advance is in the development of targeted MAOIs. At the simplest level, this involves inventing new drugs that work only in the brain. For instance, a pro-drug (MD 72394) has been developed that is activated by decarboxylation; when administered with a peripheral decarboxylase inhibitor, MAO inhibition can be limited to the brain (Palfreyman *et al*, 1984). A refinement of this is the synthesis of MAOIs that are selective for specific neurons: these would be substrates for selective uptake sites, and therefore would be concentrated in the appropriate neurons – an example may be amiflamine, which shows some selectivity for serotonergic neurons (Ask *et al*, 1984). Finally, an MAOI that was also an uptake blocker could be of great benefit, as the uptake blockade would both potentiate the MAOI as well as reduce access of tyramine to the neurons.

## MAOI combination treatments

These have long been accepted to be some of the most powerful treatments in psychopharmacology. For depression, combinations with TCAs (Sargant, 1963; Sethna, 1974), lithium (Nelson & Byck, 1982), or *l*-tryptophan (Coppen *et al*, 1963; Baldessarini, 1984) have proved to be effective in resistant cases. Although the benefits may be great, risks may be enhanced, and therapy of this type should be carefully supervised. The combination with TCAs seems the most hazardous, especially with the more selective serotonin reuptake blockers, e.g. clomipramine (Beaumont, 1973) and fluoxetine (Graham & Ilett, 1988). Animal pharmacological work by Marley & Wozniak (1983) showed that it is the TCAs with serotonin reuptake inhibition which are especially dangerous. However, once established, it appears that those tricyclics which significantly inhibit noradrenaline reuptake lower the risk of 'cheese reactions' by prevention by tyramine uptake (Pare *et al*, 1982). The newer MAOIs, especially the reversible ones, should be safer in such combinations, although studies are needed to confirm this.

In the anxiety disorders, the combination of MAOIs and benzodiazepines is often highly effective (Tyrer, 1982). A sensible strategy would appear to be one in which a short course of a benzodiazepine is used for its acute anxiolytic action, while effective MAO inhibition is obtained; the benzodiazepine can then be reduced and stopped after a few weeks with minimal risk of tolerance or withdrawal symptoms.

## How do MAOIs work?

Although from a number of different chemical series, all MAOIs interact with the active site of MAO to inactivate this enzyme, in both brain and peripheral tissues. Some also have other effects; for instance, tranylcypromine has amphetamine-like properties (Tyrer, 1982). The inhibition of MAO leads to accumulation of monoamine neurotransmitters (Spector *et al*, 1963), which is presumed to initiate the antidepressant effects of these drugs. Indeed, increased throughput of noradrenergic synapses can be demonstrated (Murphy *et al*, 1986). However, since a therapeutic response takes several weeks to appear, the acute changes are clearly not a sufficient explanation for it. Thus it has been suggested that adaptive changes in receptor number or second-messenger function may be critical (see Murphy *et al*, 1984; Youdim & Finberg, 1985).

More recently, ideas have focused on pre-synaptic mechanisms. Studies from the US National Institute of Mental Health have demonstrated that MAOIs substantially attenuate whole-body noradrenaline turnover (Hauger *et al*, 1988) – an effect presumably mediated by increased autoreceptor inhibition and consequent reduction in noradrenergic neuronal activity (Blier & de Montigny, 1987). It has been suggested that this increases noradrenergic synaptic efficiency (Ross *et al*, 1985; Rudorfer *et al*, 1987), inefficiencies of which may underlie depression (Rudorfer *et al*, 1985). This change could also contribute to their effectiveness in panic disorder, although a different underlying pathology (e.g. paroxysmal noradrenergic overactivity) is likely to exist in these patients (Charney & Redmond, 1983; Charney & Heninger, 1986). We have suggested that TCAs work in panic disorder by stabilising noradrenergic function (Nutt & Cowen, 1988; Nutt & Glue, 1989), and the pre-synaptic effects of MAOIs are consistent with this theory.

## Conclusion

MAOIs clearly still have a place in the treatment of depressive and anxiety disorders, both as alternatives to the TCAs, and as first-line choices in their own right in some conditions (e.g. atypical depression). One of the major problems – irreversibility of action – appears to have been overcome with the imminent introduction of newer drugs, such as moclobemide and brofaromine. Although initial claims that these compounds will be significantly less likely to show interactions with foodstuffs require more comprehensive clinical evaluation, if these are correct, they could lead to the full rehabilitation of MAOIs.

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**Comment**

# Neuronal Misconnections and Psychiatric Disorder

## Is There a Link?

ROBERT GOODMAN

Brain damage can induce anomalous neuronal connections in experimental animals, which can sometimes result in maladaptive behaviour, particularly when damage occurs early in development. Anomalous patterns of neuronal connection can also arise from genetic disorders. In humans, neuronal misconnections could be involved in a variety of psychiatric disorders. For example, they may account for the link between hyperkinesis and childhood hemiplegia, and for the link between schizophrenia and 'alien tissue' lesions of the temporal lobes. Predictions from misconnection hypotheses can potentially be tested in neuropathological, neurophysiological, and clinical studies.

Structural and functional abnormalities of the nervous system may contribute to many psychiatric disorders, particularly those that are often associated with acquired brain damage, and those that have a strong genetic component. Existing neurological explanations of psychiatric disorders generally attribute psychiatric symptoms to quantitative abnormalities of the nervous system, either of deficiency or of excess. Neurodeficiency explanations invoke absolute or relative deficiencies in neurons, connections, or neurotransmitters. For example, Alzheimer's dementia has been linked to the loss of isodendritic neurons from specific subcortical nuclei (Rossor, 1981), depression has been attributed to underactivity of monoaminergic neurons (van Praag, 1978), and disorders of socio-emotional development have been attributed to right hemisphere deficiencies (Weintraub & Mesulam, 1983). By contrast, neuro-excess explanations invoke neural excesses rather than deficiencies. For example, type I schizophrenia has been attributed to overactivity of the mesolimbic dopaminergic system (Crow, 1980), and the personality abnormalities associated with temporal lobe epilepsy have been attributed to sensory–limbic hyperconnection (Bear, 1979).

While neurodeficiency and neuro-excess explanations have dominated psychiatric theorising, remarkably little attention has been paid to the alternative possibility, that psychiatric disorders may result from qualitative abnormalities in the ways neurons are connected to one another. Although several authors have suggested links between neuronal misconnections and psychiatric disorders (e.g. Prechtl, 1978; Schneider, 1979; Randall, 1980, 1981, 1983; Spiers *et al*, 1985; Janowsky & Finlay, 1986), these suggestions do not appear to have evoked much psychiatric interest. The purpose of this article is to increase psychiatric awareness that neuronal misconnections could be relevant to a wide range of psychiatric disorders. Although there is far too little evidence at present to prove that misconnections cause specific psychiatric syndromes, the circumstantial evidence suggests that there may be a case worth investigating. When so little is known about the neural origins of psychiatric disorders, misconnection hypotheses should not be dismissed out of hand, particularly since recent advances in neuropathology, neurophysiology, and brain imaging should make it increasingly possible to test the predictions of these hypotheses.

### Misconnections after brain damage

In experimental animals, there is now abundant evidence that brain damage can be followed by extensive 'rewiring' (see Finger & Stein, 1982). At least three sorts of process seem to be involved in this rewiring: axonal sprouting; axonal rerouting; and modified axonal weeding.

When an axon is transected by brain injury, the distal portion dies, but the proximal portion may form growth cones and regenerate new terminals. This regenerative sprouting can result in the formation of functional connections close to the site of injury. In addition, if neuronal damage eliminates some of the axons innervating an area, the remaining axons to that area may produce collateral sprouts (new side-branches) that reoccupy the vacated synaptic sites. Regenerative and collateral sprouting can occur after damage to the immature or adult brain. If brain injury occurs very early in development, some growing axons will not yet have reached their normal destination. If that destination is destroyed, then the growing axons may be routed to alternative destinations.

The axonal collaterals (side-branches) of developing neurons are typically more widely distributed than the collaterals of mature neurons (see Cowan *et al*, 1984). In rats, for example, neurons in the visual cortex contribute to the corticospinal tract in neonates but not in adults. The transition from the relatively diffuse pattern of early connections to the more focused pattern of mature connections is brought about by a 'weeding out' process, in which many axonal collaterals are selectively eliminated. In humans, this phase of selective loss may continue up to adolescence or into adulthood. Thus in the human frontal cortex, synaptic density progressively declines from the second year of life until late adolescence, presumably as a result of selective loss (Huttenlocher, 1979). When brain damage occurs before the end of the phase of axonal weeding, the pattern of selective loss may change (Janowsky & Finlay, 1986). If axonal collaterals that would normally have been retained are destroyed by brain injury, there may be a compensatory retention of axonal collaterals that would normally have been weeded out.

As a result of these various processes, brain damage can elicit the production of anomalous connections, particularly if the damage occurs early in brain development. This greater neuroplasticity after early damage may be adaptive, but is not invariably so. The anomalous connections formed after brain damage may sometimes enhance recovery; in other instances, however, they appear to impair recovery. Schneider's (1979) studies in hamsters provide a particularly clear illustration of both the adaptive and the maladaptive potential of anomalous connections. If the midbrain tectum is lesioned at birth, redirected growth of the optic tract leads to the formation of anomalous connections. In some instances, these anomalous connections result in the sparing of visually elicited turning responses that are lost after comparable lesions in adulthood. In other instances, however, the anomalous connections lead to maladaptive turning responses, e.g. persistently turning the wrong way as a result of anomalous retinal projections to the wrong side of the midbrain. These misdirected movements can be abolished by surgical division of the relevant anomalous pathways.

Little is known about misconnections after childhood brain damage, although their existence is suggested by patchy hyperaesthesia and abnormally persistent mirror movements in brain-damaged children (see Schneider, 1979).

### Inheritable misconnections

During brain development, the normal pattern of neuronal interconnection results from a precisely choreographed process of axonal and dendritic growth (Jacobson, 1978). Cell surface glycoproteins are believed to play an essential part, not only in directing this neuritic growth, but also in enabling neurites to recognise when they should stop growing and form synapses because they have arrived at the appropriate destination (Edelman, 1983; Lockerbie, 1987). Genetic disorders affecting these cell surface markers can result in abnormal patterns of neural connections, as in the 'staggerer' mutant of the mouse (Edelman, 1983). Total and ocular albinism are another group of inheritable disorders associated with CNS misconnections in a variety of mammalian species, including humans (Guillery *et al*, 1975; Creel *et al*, 1978).

### Possible psychiatric consequences of misconnections

If anomalous neuronal connections do have psychiatric consequences, these are likely to depend on the nature and extent of the misconnections. In this regard, it seems helpful to distinguish somewhat arbitrarily between focal and diffuse misconnections. Focal misconnections between specific neural systems could result in a variety of bizarre symptoms and personality traits, just as the anomalous retinotectal connections in Schneider's (1979) hamsters produced bizarre turning responses. By contrast, diffuse and relatively widespread misconnections may be more likely to produce cognitive and behavioural impairments due to a poor signal:noise ratio.

Focal misconnections could give rise to a variety of psychotic phenomena. Randall (1983) has explored some of the possible links between misconnections and schizophrenic symptoms. For example, cognitions relayed directly from a higher-order system to the primary auditory cortex might be experienced as voices, while focal misconnections between discrete higher-order neural systems might result in the abnormalities of thought seen in knight's moves and the interpenetration of themes. In this context, it is interesting to note that two recent neuropathological studies of schizophrenia (Kovelman & Scheibel, 1984; Jakob & Beckmann, 1986) have demonstrated abnormalities of neuronal migration and orientation that could give rise to misconnections.

Focal misconnections could also underly various non-psychotic idiosyncracies. For example, anomalous connections between the sensory and limbic systems could account for the highly idiosyncratic sensory preferences that Corbett & Campbell (1981) described in severely retarded children. Misconnections between non-limbic and limbic systems could also contribute to the (disputed) association between temporal lobe epilepsy and abnormal personality traits such as paranoia, viscosity, and hypergraphia (see Trimble, 1983; Spiers *et al*, 1985). Although Bear (1979) has attributed the association between temporal lobe epilepsy and personality abnormalities to sensory–limbic *hyperconnection* induced by the seizures themselves, it is just as plausible that structural lesions in the temporal lobes induce sensory–limbic *misconnections*, in addition to triggering seizures (Spiers *et al*, 1985).

Broadening the scope of the misconnections hypothesis still further, focal misconnections can potentially be invoked to explain any psychiatric disorder in which the symptoms and signs appear to be qualitatively and not quantitatively distinct from the normal range of experience and behaviour. Thus Randall (1983) has suggested a role for misconnections in infantile autism and Gilles de la Tourette syndrome.

The likely psychiatric consequences of diffuse misconnections are different from those of focal misconnections. If diffuse misconnections channel irrelevant information ('noise') between neurons that should not normally be connected, this might well interfere with a variety of cognitive functions. For example, it is plausible that a low signal:noise ratio could disrupt concentration and the regulation of activity, leading to inattention and hyperactivity. High levels of 'noise' might also disrupt problem solving and new learning, leading to intellectual impairment and specific learning problems. Prechtl (1978) has suggested that components of the so-called minimal brain dysfunction syndrome may result from anomalous connections induced by early brain damage. Since the link between hyperactivity and perinatal adversity is weak in the general population (Nichols & Chen, 1981), and since genetic factors seem to play an important part in hyperactivity (Taylor, 1986), it is worth emphasising that diffuse misconnections causing hyperactivity (and other problems) could potentially stem from genetic defects rather than early brain damage.

If focal and diffuse misconnections occur together, the result may be a mixture of bizarre symptoms and cognitive impairments. Schizophrenia might be a case in point. As already discussed, Randall (1983) has suggested that focal misconnections cause the psychotic symptoms of schizophrenia. Diffuse misconnections could account for the attentional deficits that can precede overt schizophrenia (Zeitlin, 1986). Perhaps a genetic tendency to misconnections accounts for the high rate of attentional problems in the children of schizophrenics (Neuchterlein, 1986).

## Is there any evidence for a link?

To summarise so far, misconnections do occur in experimental animals, where they can have adverse behavioural consequences, and they may occur in humans, where they could cause a variety of psychiatric disorders. Although animal analogies, together with considerations of plausibility, are sufficient grounds for considering a possible link between neuronal misconnections and psychiatric disorders, they clearly provide no evidence for such a link. My own view is that there is no compelling evidence, but that there is limited circumstantial evidence. In particular, there are some instances in which specific links between neurological and psychiatric disorders are better explained by a 'misconnection' theory than by the rival neurodeficiency and neuro-excess theories. Two such instances are presented in the following sections: the link between childhood hemiplegia and hyperkinesis; and the link between early-acquired temporal lobe lesions and schizophrenia.

## Childhood hemiplegia and hyperkinesis

Hyperkinesis is a psychiatric syndrome involving severe and pervasive hyperactivity that is generally at its most intense during the primary school years (Taylor, 1986). This hyperactivity represents a failure in the normal regulation of attention and activity (Taylor, 1986). Although hyperkinesis is a rare disorder in neurologically intact children, it is much commoner among children with early-acquired brain damage (with or without severe intellectual handicap) (Rutter *et al*, 1970). The classic descriptions of hyperkinesis suggest a particularly close link with childhood hemiplegia, whether congenital or acquired (Ounsted, 1955; Ingram, 1955, 1956). The hemispherectomy literature provides further evidence for this link, with many candidates for surgery reportedly being as handicapped by their disruptive hyperactivity as by their intractable seizures (see Goodman, 1986). Hemispherectomy was generally reported to cure the behavioural problems is well as the seizures (Goodman, 1986).

If the link between childhood hemiplegia and hyperkinesis does exist, and is not just an artefact or referral or diagnostic bias, what could account for this link, and for the apparent cure of hyperkinesis by hemispherectomy? One possible explanation for the link is that hyperkinesis is a neurodeficiency disorder, with the brain damage that causes hemiplegia also destroying the neural systems involved in regulating activity and attention. If that were true, however, hemispherectomy should not cure hyperkinesis and might even aggravate it, just as a frontal lobectomy would not be expected to cure a frontal lobe syndrome.

Alternatively, could the link be explained by a neuro-excess theory that attributed the hyperkinesis to clinical and subclinical seizure discharges arising from the damaged hemisphere? Volleys of seizure discharges could disrupt attention and activity control. If this were so, hemispherectomy could cure the hyperkinesis by removing the source of the seizure discharges. Although this neuro-excess explanation is supported by the link between temporal lobe epilepsy and hyperkinesis (Ounsted *et al*, 1966), there are problems. First, hyperkinesis is probably linked not with temporal lobe epilepsy itself but with the underlying brain damage that gives rise to the epilepsy. Thus according to the underlying cause, the prevalence of hyperkinesis in temporal lobe epilepsy can vary from 9% to 40% (Ounsted *et al*, 1966). In addition, of the eight children described by Ingram (1956) with both hyperkinesis and congenital hemiplegia, five had no seizures at all. These two arguments also go against the theory that hyperkinesis in hemiplegia is produced by anticonvulsants. Previous emphasis on the link between hyperkinesis and phenobarbitone medication may have been exaggerated. Thus in Ounsted's (1955) series of children with epilepsy and hyperkinesis, withdrawal of phenobarbitone cured the hyperkinesis in only 2 of 70 cases. It is also relevant that both Ounsted (1955) and Ingram (1956) found that the most helpful (or least harmful) anticonvulsant for children with epilepsy and hyperkinesis was primidone, whose breakdown products include phenobarbitone.

Since the link between childhood hemiplegia and hyperkinesis cannot easily be explained by the effects of destructive lesions, seizure discharges, or anticonvulsant side-effects, it seems appropriate to consider a 'misconnection' explanation. Animal experiments have demonstrated that unilateral lesions can elicit anomalous ascending and descending connections (see Lund, 1978; Finger & Stein, 1982; Goldman-Rakic *et al*, 1983). In children too, Schneider (1979) has suggested that the presence of anomalous ascending and descending connections explains why patchy hyperaesthesia and abnormal mirror movements occur after unilateral brain damage in childhood hemiplegia. Anomalous connections could also explain the link between hyperkinesis and childhood hemiplegia. If anomalous projections from the damaged hemisphere channel irrelevant information ('noise') into specific regulatory systems in the intact hemisphere and brain stem, this might disrupt the control of attention and activity.

Alternatively, if the projections into the damaged hemisphere were anomalous, the input of 'garbled' information might lead that hemisphere to make a maladaptive contribution to the regulation of activity and attention. If hyperkinesis did arise from anomalous projections to or from the damaged hemisphere, hemispherectomy would free the rest of the brain from the disruptive effects of these misconnections, thereby curing the hyperkinesis by permitting the intact control systems to function without interference.

## Early-acquired temporal lobe lesions and schizophrenia

There is a disproportionately high rate of schizophrenia in individuals with brain damage affecting the temporal lobes (Davison & Bagley, 1969). Studies of patients who have needed a temporal lobectomy for intractable temporal lobe epilepsy have provided valuable information on organic risk factors for schizophrenia (e.g. Taylor, 1975). In the Guy's–Maudsley–King's series of temporal lobectomy patients, neuropathological examination of the resected portion of the temporal lobe demonstrated that mesial temporal sclerosis was the commonest neuropathological abnormality, followed by 'alien tissue' lesions (Falconer *et al*, 1964). Mesial temporal sclerosis is a gliotic scarring of mesial temporal structures that probably results from local neuronal hypoxia, often consequent on prolonged febrile seizures in early childhood. 'Alien tissue' lesions are a heterogeneous group of focal abnormalities, many of which are of embryonic origin. Alien tissue can range from patches of cortical dysplasia to hamartomatous malformations constructed from glial, neuronal or vascular elements. In a study of patients drawn from the Guy's–Maudsley–King's series, Taylor (1975) found that the rate of schizophrenia differed strikingly between patients with mesial temporal sclerosis and patients with alien tissue. Of 47 patients with alien tissue lesions, 11 (23%) developed a schizophrenia-like psychosis. By contrast, in a comparison group of 41 patients with mesial sclerosis, only two (5%) developed a schizophrenia-like psychosis.

Taylor (1977) attributed the higher rate of schizophrenia in patients with alien tissue lesions to the fact that these patients are more likely to have their first seizure during adolescence, which is taken to represent a period of greater psychological or biological vulnerability. This explanation must be questioned, however, since patients with alien tissue lesions were almost equally likely to become schizophrenic whether their seizures began before, during, or after adolescence (Table I).

What alternative explanation could account for the particularly strong link between schizophrenia and alien tissue lesions? One possible neurodeficiency explanation is that schizophrenia results from the

TABLE I
*The relationship between schizophrenia and alien tissue lesions of the temporal lobe according to age of onset of epilepsy: reanalysis of data from Taylor (1975)*

| | *Age at onset of epilepsy (years)* | | |
|---|---|---|---|
| | *0–10* | *11–20* | *21+* |
| Total number of patients with alien tissue lesions | 19 | 15 | 13 |
| Number who became schizophrenic | 4 | 4 | 3 |

destruction of specific systems within the temporal lobe, with alien tissue lesions being more likely than mesial temporal sclerosis to destroy these systems, perhaps because alien tissue lesions can occur anywhere in the temporal lobe. Although this possibility cannot be ruled out, it seems improbable that schizophrenia is a 'focal' neurodeficiency syndrome analagous to the frontal lobe syndrome or the aphasias. Thus the link between schizophrenia and adult-acquired temporal lobe damage is much weaker than the corresponding link between the frontal lobe syndrome and adult-acquired frontal damage, or between the aphasias and adult-acquired damage to the 'language' areas (Lishman, 1987). It is also worth noting that the link between focal brain damage and specific neurodeficiency syndromes is often weaker when the focal lesion arises very early in development (see Goodman, 1987). For example, extensive prenatal or perinatal damage to the left hemisphere is typically followed by normal or nearly normal language acquisition (Smith & Sugar, 1975; Dennis & Whittaker, 1977; Woods & Carey, 1979; Vargha-Khadem *et al*, 1985). Consequently, a neurodeficiency explanation would be hard pressed to account for schizophrenia being particularly closely linked to alien tissue lesions, given the embryonic origin of many if not all of these lesions.

Does a neuro-excess theory fare any better? Flor-Henry (1969) has suggested that schizophrenia may be caused by seizures involving the limbic system. If this were true, it would be difficult to explain why schizophrenia occurred more commonly among patients with alien tissue, since patients with mesial temporal sclerosis had, on average, suffered from severe temporal lobe epilepsy for a greater proportion of their lives (Taylor, 1975). It is also pertinent that temporal lobectomy did not generally cure established psychoses in either group of patients, even when seizures were alleviated or eliminated (Taylor, 1972).

To recap, the striking association between alien tissue lesions and schizophrenia cannot readily be explained by the locus or extent of the focal brain damage, or by the type, severity, or age of onset of the seizure disorder. By contrast, a 'misconnection' theory can explain why schizophrenia is commoner in the alien tissue group than in the mesial temporal sclerosis group. Many if not all alien tissue lesions are embryonic in origin, whereas mesial temporal sclerosis arises postnatally, often linked to episodes of prolonged status epilepticus in the first two years of life. Animal experiments suggest that this difference in the time of origin of the two sorts of lesion could affect their relative propensity to induce neuroplastic changes. In monkeys, for example, prenatal lesions to the frontal cortex can induce extensive cortical remodelling that is not seen following comparable damage in infancy (Goldman-Rakic *et al*, 1983). If prenatal lesions are more liable to induce anomalous connections than postnatal lesions, and if anomalous connections are relevant to schizophrenia, this could account for the higher rate of schizophrenia in the alien tissue group. If this explanation is correct, then the persistence of schizophrenia after temporal lobectomy suggests that the misconnections induced by temporal lobe lesions extend well beyond the immediate vicinity of the lesions themselves.

It is worth noting in passing that primate experiments demonstrate that early-acquired brain abnormalities can have important behavioural consequences in an adult, even when behaviour was apparently normal during development (Goldman-Rakic *et al*, 1983). Consequently, it is not implausible that early-acquired misconnections might lie dormant until they give rise to schizophrenia in adult life. Randall (1983) has suggested that myelination, which continues well into adulthood, plays a central role in unmasking the latent brain deficits in schizophrenia. Alternatively, the latent deficits may be unmasked by the progressive 'weeding' of neuronal connections that continues at least until adolescence (e.g. Huttenlocher, 1979).

## Hypothesis testing

Researchers and clinicians interested in the biological origins of psychiatric disorders need to ask two key questions about hypotheses that neuronal misconnections cause psychiatric problems. Firstly, are such hypotheses sufficiently plausible to warrant investigation? Secondly, can the hypotheses be used to generate potentially refutable predictions? My own view is that both questions should be answered in the affirmative.

As already described, three lines of argument suggest that misconnection hypotheses warrant scientific investigation: arguments from animal models; arguments from 'common-sense' plausibility; and arguments from instances in which misconnection hypotheses apparently provide the most satisfactory explanation for specific links between neuropathology and psychopathology. Taken together, these three lines of argument make it difficult to justify dismissing misconnection hypotheses out of hand.

If misconnection hypotheses do warrant investigation, the next stage is to derive predictions from the hypotheses that are potentially refutable with current investigative techniques. If this were impossible, the misconnection hypotheses could justifiably be dismissed as 'armchair speculation' of little or no scientific value. In fact, such a dismissal would be unjust since misconnection hypotheses can generate testable predictions, as can be illustrated by three sets of examples, focusing in turn on predictions that are potentially testable using neuropathological, neurophysiological, and clinical techniques.

New histological techniques can delineate the cortical distribution of specific neurotransmitter systems (e.g. Chan-Palay, 1987; Kritzer *et al*, 1987; Lewis *et al*, 1987). Some of these techniques could potentially be applied to surgical or autopsy specimens to investigate the predictions of misconnection hypotheses. For example, is the pattern of mesolimbic and mesocortical dopaminergic innervation qualitatively abnormal in temporal lobectomy specimens? If so, are these abnormalities more prominent around prenatal lesions than around comparable postnatal lesions? Taking this a stage further, are qualitative abnormalities in the distribution of ascending afferents related to the type and intensity of associated psychopathology?

Neurophysiological techniques could also be used to investigate misconnection hypotheses. The early components of the visual evoked response (VER) are believed to be related to the activity of the primary visual system (Goff *et al*, 1978; Harden, 1982). Flash stimuli are particularly suitable for eliciting VERs in children since flash responses are not dependent on the individual's active co-operation and attention (Harden, 1982). If hyperactivity arises in the context of very widespread misconnections, differences in the early components of the flash-elicited VER might be evident in a comparison of hyperactive subjects with controls matched for age and IQ. If misconnections channel non-visual information into the primary visual system, this may increase the amount of averaging needed to resolve the early components of the VER from the background 'noise' – an effect that should be particularly pronounced if the subjects are simultaneously executing a non-visual task. Consequently, if VERs are elicited while subjects are sitting quietly, and again while the subjects are tapping out a rhythm, the addition of rhythmic tapping should result in a more marked drop in the signal:noise ratio of the early VER components in the hyperactive subjects than in the controls.

Clinical studies correlating psychopathology with neurological abnormalities could also examine some of the predictions of misconnection hypotheses. For example, personality abnormalities could be studied in two groups of age- and IQ-matched adults with temporal lobe epilepsy, with individuals with prenatal lesions and adolescent-onset epilepsy being compared with individuals with postnatal lesions and childhood-onset epilepsy. If personality abnormalities are a direct result of seizures (Bear, 1979), they should be more pronounced in the group with childhood-onset epilepsy. Conversely, if personality abnormalities reflect misconnections (Spiers *et al*, 1985), they should be more prominent in the group with prenatal lesions.

Finally, it is worth noting that misconnection hypotheses have potential implications for treatment. Randall (1980, 1981) has suggested that some psychotropic drugs act by the differential suppression of misconnections. Neurosurgical options also need to be considered. In experimental animals, selective neurosurgery can abolish maladaptive behaviour due to focal misconnections (Schneider, 1979), and Randall (1980, 1983) has suggested that highly selective neurosurgical approaches may also be effective in humans. This ultimate test of the misconnections hypothesis may eventually warrant serious consideration if evidence for a link between focal misconnections and psychiatric disorder accumulates. For the present, however, the prospect that some patients with severe and intractable psychiatric disorders could be cured by the stereotactic division of a relatively small number of anomalous tracts must remain a dream or nightmare of science fiction.

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***Review Article***

# Day-Hospital and Community Treatment for Acute Psychiatric Illness

## A Critical Appraisal

FRANCIS CREED, DAWN BLACK and PHILIP ANTHONY

Findings on the efficacy of day-hospital and community treatment for acutely ill psychiatric patients have been contradictory. This review confirms the methodological problems previously noted, but highlights the variation in feasibility of day care: staffing levels and the attitudes of staff appear to have been responsible, along with the severity and chronicity of illness. The comparison of day and in-patient care to see which is 'superior' has been unrewarding, and further research is needed. Day-hospital treatment is unlikely to be more widely used for acutely ill patients until: (a) there is clear evidence that certain patients are best treated in this way; (b) the social and clinical characteristics of such patients are defined; (c) adequate staffing is achieved (i.e. day care is not regarded as a cheap option); and (d) day centres are available for chronic patients.

Although it is nearly 15 years since the Department of Health and Social Security (DHSS) recommended that acutely ill psychiatric patients be treated in day hospitals rather than in-patient units (Department of Health and Social Security, 1975) the efficacy of such treatment remains unproven and the role of the day hospital unclear. Numerous reviews have been published, but their conclusions are contradictory.

One American and three English reviewers (Braun *et al*, 1981; Vaughan, 1983; Wilkinson, 1984; Tantam, 1985) have concluded that claims of the superiority of day-hospital over in-patient care for severely ill patients are premature because most of the studies have been beset with methodological inadequacies. Two further reviews (Greene & de la Cruz, 1981; Schene & Gersons, 1986) concluded that day-hospital treatment was superior in terms of social adjustment, but in all other respects the evidence was too flimsy to draw definite conclusions. On the other hand, three further American reviewers (Kiesler, 1982; Mosher, 1983; Rosie, 1987) have been prepared to accept the evidence as scientifically sound, and recommended that day care should become more widespread.

It is partly because of this lack of satisfactory empirical work that the development of day-hospital treatment has been described as being "disordered" (Vaughan, 1983) and determined "more by fashion than by experimental evidence" (*Lancet*, 1985). However, there are practical problems also. Some day hospitals cannot care for acutely ill and severely neurotic patients because they are full of chronic patients, especially those with psychotic illnesses (McGrath & Tantam, 1987; *Lancet*, 1987).

This review examines the scientific and practical problems of assessing the efficacy of day-hospital treatment for acute illness. Firstly, we consider whether the methodological weaknesses of previous studies can be overcome in future. Secondly, we assess the specific questions raised in previous reviews: (a) which patients benefit most from day-hospital treatment (Wilkinson, 1984), and (b) what are the essential ingredients of day-hospital treatment, compared with both day-centre and in-patient facilities (Vaughan, 1983)?

The term 'acute' is used in this review to indicate those illnesses that present to psychiatrists for a fresh episode of treatment and not transfers from a long-stay bed. Although we have tried to concentrate on services that are confined to direct admissions from the community, this has not always been possible, because some published reports have not been sufficiently clear about the source of patients, and some studies have admitted a mixture of out- and in-patients to the day hospital.

A number of studies have been included that have evaluated community services set up and run with the specific aim of avoiding in-patient admission. These may or may not have included day care, but have been mentioned in this review because the published studies of day hospitals have not been as detailed as these community-service evaluations regarding the requirements of a service that can treat seriously ill patients without recourse to in-patient admission.

The term 'day hospital' is used in the sense of Rosie (1987), to indicate a facility that provides diagnostic and treatment services for acutely ill patients who would otherwise be treated on traditional psychiatric in-patient units. This distinguishes them from 'day-treatment programmes' for specialised groups of patients, or those with partially remitted illness, and 'day centres' that have the maintenance of chronic psychiatric patients as their primary task.

## Methodological problems with previous research

Wilkinson (1984) found that existing studies have used small numbers of patients, with a selection bias, only partial or no randomisation, and little control of important variables such as diagnosis, medication, and treatment between discharge and follow-up. Day care and in-patient care have not been clearly defined, outcome measures have not been standardised or rated blindly, and too many patients have been lost to follow-up. Wilkinson clearly hoped for an ideal study, but did not consider the practical problems which may prevent this. His list of criticisms was similar to that of Guy & Gross (1967), and during the last 20 years the 'ideal' study has not been performed. It is necessary to understand why this is so if future research is to be different, and we must decide what tentative conclusions can be drawn from the literature. Some of Wilkinson's criticisms are likely to continue to vex those who try to research the efficacy of day hospitals, and these are considered first.

### Blind ratings

Blind ratings are, of course, desirable, but are very difficult to achieve. Washburn *et al* (1976) hired outside trained raters, who were not told of the patient's experimental group, but they 'inevitably' learned of this during the interview. To make blind ratings, every interview would have to be recorded, the clues as to the modality of treatment removed, and the recording then rated by a second research worker. Such a method is unlikely to be feasible unless enormous research funds become available.

### Number of subjects and standardised assessments

The number of subjects has tended to be inversely proportional to the detail of the patient assessment. Thus the large survey of the DHSS (1969) merely used a clinician's judgement of 'improvement' as an outcome measure, and Wilder *et al* (1966) used readmission rates and the unstandardised criterion of 'adjustment perceived by patient and family'. More recent studies have used standardised measures, but groups have generally been limited to 45–60 patients, because such measures are time consuming, must be done by independent research staff, and involve interviews with both patient and informant if they are to be done properly. In view of this limitation of numbers, the study population must be chosen with care.

### Outcome criteria

As with the studies of discharged in-patients (Avison & Speechley, 1987) different outcome criteria have been used to evaluate day-hospital treatment, making comparison of studies difficult. Readmission rates have been widely used, but measures of clinical and social change, and the level of burden on the patient's relatives, may be more meaningful. With so many different measures of outcome to be considered, it is meaningless to speak of the 'superiority' of one form of care over another, unless there is evidence for this in a majority of these parameters.

#### *Readmission rates*

Three measures have been used: proportion of patients readmitted after the study period has ceased; duration of such readmissions; and, conversely, days spent in the community. Patients have been followed up after one or two years. The one-year follow-up study of Herz *et al* (1971) found that day patients had a lower readmission rate than in-patients, but Michaux *et al* (1973) found no difference on this measure. Wilder *et al* (1966) found no significant difference at two years between day and in-patient groups in the readmission rate or cumulative hospital stay, whereas Endicott *et al* (1979) found some evidence that day care following brief in-patient care reduced the duration of any subsequent readmissions.

The only important additional finding in the community-care studies was that of Stein & Test (1980), who found that the reduction of in-patient care during the study year was not maintained over the subsequent two years.

These results do not provide any clear evidence that treatment in a day hospital prevented further in-patient admissions. This may be because readmission is closely related to previous admissions (Avison & Speechley, 1987), and only a study of new patients would show whether day-hospital admission is superior to in-patient treatment in this respect. Hoult (1986) provides anecdotal evidence to support this contention so far as treatment in the community is concerned. Other evidence suggests that there are subgroups of patients who have high and low readmission rates, and these should be considered separately in future research (Lavik, 1983). Although readmission rates can easily be measured, they are of limited value in assessing the efficacy of day-hospital treatment.

### *Clinical versus social findings*

Superiority of day care over in-patient care has generally been more evident on measures of social functioning rather than symptom remission. For example, Herz *et al* (1971) found their day-care group was superior at follow-up on the scales of daily routine (leisure time and housekeeper role), whereas the two groups had similar symptoms. Wilder *et al* (1966) found that in-patients reported better family adjustment at follow-up than the day patients, but did wonder whether discharged in-patients denied their family problems in comparison with day patients, who had received family therapy.

An interesting result emerged from the naturalistic study of Michaux *et al* (1973), which seemed to indicate greater symptomatic improvement among the in-patients during the period of admission, whereas at two-month and one-year follow-up, day patients showed superior social functioning, although symptomatic status was similar at these times.

A similar pattern has emerged among community studies. Fenton *et al* (1979) identified the superiority of community treatment only on social measures. Stein & Test (1980) found improvement on both clinical and social measures at the end of the study period, but relapse in both spheres had occurred at two-year follow-up, although the community group retained its superior employment status.

These findings include disparate aspects of social functioning (role performance, employment, and social adjustment), as studies to date have not used uniform measures. However, the apparent concordance of results indicating the superiority of day care with respect to social, rather than symptomatic, recovery needs to be examined further and possible reasons for this are discussed below.

### *The burden on the patient's relatives*

A rather different outcome measure, used in a minority of studies, is reduction of the burden that the patient's illness imposes on his relatives, or others in close contact with him/her. Evidence on this question is limited and confused, owing to the problems in conceptualising various aspects of burden (Platt, 1985; Fadden *et al*, 1987), but some interesting observations have emerged.

Michaux *et al* (1973) found that relatives of day patients expressed greater satisfaction with the patient's role performance and free time activity after a year than the relatives of in-patients. It is not clear whether this represents superior performance on the part of the patient, or a more favourable perception of it by the relative. Washburn *et al* (1976) also found that at one year the relatives of day patients were continuing to report a reduction in burden, whereas the relatives of in-patients were reporting an increase. This could mean that day-hospital treatment is more effective than in-patient treatment in alleviating burden, but that the full effect of this is delayed (Creed *et al*, 1988).

The community study of Fenton *et al* (1979) throws further light on this subject, because their comprehensive evaluation of burden indicated that, after one month of treatment, the relatives of the in-patients complained of having to carry the responsibilities ordinarily carried by the patient, and so in-patient admission was associated with more burden on the relatives, even though admission is generally regarded as reducing this, at least in the short term. Much more research on burden is required. The subjective and objective aspects need to be clarified (Fadden *et al*, 1987), and if day-hospital treatment does in fact reduce burden in the long-term, the reasons for this must be explored.

## **Follow-up rate**

Two studies mentioned in this review have achieved follow-up rates of 90% (Wilder *et al*, 1966; Michaux *et al*, 1973), but two other studies with highly selected populations (Herz *et al*, 1971; Fenton *et al*, 1979) followed up 77% and 56% respectively. These low follow-up rates limit the usefulness of these studies, which are otherwise informative. The studies of community programmes, whose results are quoted where they throw additional light on treatment outside of hospital, have rated at follow-up 88% of patients at one year (Hoult, 1986) and 81% at two years (Stein & Test, 1980).

It would be wrong to equate follow-up rate with the quality of a study, however, as the proportion of patients seen at follow-up depends partly on the nature of the population studied. A true cross-section of patients entering a district psychiatric service will often include some highly mobile people, so a considerable attrition rate is inevitable. In fact there has been a tendency for those studies with a high follow-up rate (Michaux *et al*, 1973; Stein & Test, 1980; Hoult, 1986) to have included a high proportion of patients with chronic illnesses, as indicated by the low proportion with no previous admissions (Table I).

Patients admitted to hospital are relatively accessible for research interviews, and most will be prepared to co-operate at this time. However, follow-up interviews may be resisted if they involve visits to the patient's house and further interviews with an informant. To skew the research towards the

TABLE I
*Percentage values for demographic, diagnostic, and treatment data in comparative studies*

| | *Diagnosed as schizophrenic* | *No previous admission* | *Male* | *Married* | *Aged <35 years* |
|---|---|---|---|---|---|
| Random-allocation studies (day or community v. in-patient care) | | | | | |
| Wilder *et al* (1966) | 40 | 44 | 43 | — | — |
| Herz *et al* (1971) | 49 | 63 | 41 | 36 | 65 |
| Fenton *et al* (1979) | 42 | 40 | 40 | 41 | 52 |
| Washburn *et al* (1976) | 50 | — | 0 | — | c.55 |
| Hoult (1986) | 54 | 25 | c.45 | 20 | — |
| Stein & Test (1980) | 50 | 17 | 55 | 27 | c.60 |
| Dick *et al* (1985*a*,*b*) | 0 | — | 21 | 58 | c.50 |
| Descriptive studies/matched samples | | | | | |
| Hogarty *et al* (1968) | 40 | 39 | — | — | — |
| Michaux *et al* (1973) | 54 | 27 | 25 | 55 | c.50 |
| Gudeman *et al* (1983, 1985) | 48 | 28 | — | 3 | — |
| Penk *et al* (1978) | 48 | — | 0 | 66 | c.55 |
| Gath *et al* (1973): large | 40 | — | 39 | 39 | c.16 |
| small | 8 | — | 42 | 47 | c.51 |
| McGrath & Tantam (1987) | 62 | — | — | — | — |
| Brief v. standard in-patient care (all admissions) | | | | | |
| Knights *et al* (1980) | 23 | 36 | 40 | 49 | — |
| Kennedy & Hird (1980) | 17 | 53 | 50 | 40 | 34 |
| Herz *et al* (1975) | 63 | 45 | 44 | 34 | 65 |

chronically sick improves the follow-up rate, but means that the results cannot be generalised to the acutely ill. Information on those subjects lost from follow-up is sparse. Herz *et al* (1971) found that they had been less ill at admission than the remainder, whereas Fenton *et al* (1979) and Creed *et al* (1989) found they were similar to the whole cohort in terms of severity.

**Diagnosis and previous treatment**

The populations of patients included in the various studies have been very different (Table I). The experimental studies have comprised approximately half schizophrenics, but this proportion is approximately twice that of the population of patients entering the in-patient unit of the brief-stay district services studied by Knights *et al* (1980) and Kennedy & Hird (1980). Such differences must challenge the assumption that day care is an alternative to in-patient care for all patients.

However, diagnosis and treatment history do not, in themselves, provide an adequate description of the populations studied. Although Penk *et al* (1978) and Gudeman *et al* (1983) included identical proportions of patients with schizophrenia, the number who were married were 66% and 3% respectively, so the availability of social support may have varied greatly. Another indicator that previous studies have included widely differing populations is duration of previous admissions. Data are very sparse on this point, but it is probably the simplest indicator of whether a day hospital is used for acute admissions or rehabilitation. Stein & Test (1980) reported that 34% of their patients were transferred from prolonged stay in a hospital bed, whereas all of the patients studied by Herz *et al* (1971) and Dick *et al* (1985) were acute admissions.

**Large studies or selected populations?**

Studies of selected groups of patients with a single diagnosis are attractive because this reduces the number of variables to be considered, but trying to isolate a homogeneous group may exclude a large proportion of patients. When Dick *et al* (1985) confined their study to certain diagnostic groups, they had to exclude four-fifths of recently admitted patients. If additional criteria to that of diagnosis are added, the selection becomes more severe; an extreme example of this is found in the literature concerning chronically ill patients. When Wing *et al* (1972) evaluated a day-hospital rehabilitation programme for unemployed psychotic patients, they found that out of 380 psychotic patients on the case register, only 28 fulfilled all the inclusion criteria and were willing to be involved in the study. The results were satisfactory from a scientific point of view, but could not be generalised to the larger pool of psychotic patients under the care of a district psychiatrist. This study illustrates the dilemma facing the researcher. The present state of day-hospital research suggests that large studies are still needed, so that diagnostic or demographic subgroups which seem to benefit most from day care can be identified. More rigorously controlled studies can then be applied to these selected subgroups. At present, our knowledge is far too limited to identify these patients, so inclusion of certain diagnostic groups (e.g. Dick *et al*, 1985) runs the risk of excluding those patients who might benefit greatly from day care.

### Feasibility of day care for acutely ill patients

If day-hospital treatment is a preferable form of care, can it be utilised for all, or most, patients? Vaughan (1985) thought not, and indicated that approximately 25% of all patients considered for admission to hospital could not be treated as day patients because of disturbed behaviour that was uncontainable in the community and would disrupt day-hospital treatment programmes. Others have thought differently, and have been able to allocate to a day hospital or community service all patients between 18 and 65 years of age, except those with a primary diagnosis of drug or alcohol dependence, organic brain disorder or mental retardation (Wilder *et al*, 1966; Stein & Test, 1980; Hoult, 1986), as shown in Table II. This variation may reflect the nature of the patients or their illnesses, and/or the number and attitudes of staff.

Dick *et al* (1985) limited their study to patients with diagnoses of neurosis, personality disorder and adjustment reaction, presumably considering that psychotic patients could not be treated in the day hospital. However, they also excluded many neurotic patients on the grounds that they were 'too ill', but no definition of this term was given. Since all patients with schizophrenia, affective psychosis, and organic syndromes were excluded, only a tiny proportion of all admissions would have been included in this study. Another British study which attempted to allocate patients randomly between day and in-patient care also indicated that the clinicians involved believed that day care was not suitable for acutely psychotic patients. Platt *et al* (1980) abandoned their study when they discovered that only 10% of all possible patients had been included. These two studies suggest that clinicians already have criteria regarding who is suitable for day-hospital treatment, but without detailed clinical and social assessments on those patients deemed unsuitable, these criteria cannot be ascertained.

Two American studies that had very similar patterns of exclusion were those of Herz *et al* (1971) and Fenton *et al* (1979). They randomly allocated 22% and 19% of patients respectively, and the proportions in each exclusion category were similar (Table II). This is surprising because Herz *et al*'s study was of day care, whereas Fenton *et al*'s was a community programme, with a 24-hour on-call system. Twenty-two per cent was also the figure in

TABLE II
*Percentages of patients excluded from comparative studies*

| | *Of all admissions included* | *Reasons for exclusion* | | *Admission refused* |
|---|---|---|---|---|
| | | *Too ill* | *Too well* | |
| Wilder *et al* (1966) | 100% in-patients | — | — | — |
| | 66% day patients | 33[1] | — | — |
| Herz *et al* (1971) | 22 | 38[2] | 20 | 20 |
| Fenton *et al* (1979) | 19 | 35[3] | | 46 |
| Washburn *et al* (1966) | 15 | 58 | | 27 |
| Hoult (1986) | 100[4] | | | |
| Stein & Test (1980) | 100[4] | | | |
| Dick *et al* (1985) | 22 | 30 | 12 | 36 |
| Platt (1985) | 12 | 56[5] | 22 | 10 |

1. Organic brain syndrome/alcohol or drug dependence/physical illness, 17.
2. Organic brain syndrome/alcohol or drug dependence/physical illness, 7; suicidal/homicidal, 17; psychotic/too disorganised, 14.
3. Organic brain syndrome/alcohol or drug dependence/physical illness, 19; suicidal/homicidal, 16.
4. After organic brain syndrome/alcohol or drug dependence/physical illness excluded.
5. Suicidal/homicidal, 28; psychotic/too disorganised, 28.

Penk *et al*'s (1978) study which, although not a random-allocation study, did individually match day patients with in-patients in terms of age, type and severity of illness, and personal resources.

Unlike most authors, Herz *et al* (1971) provided data on those patients who were excluded from the study because they were too ill: they were comparable to those included on major demographic variables, but they had had more previous admissions to hospital, their illnesses were more severe, particularly in terms of disorganisation, and they included more patients with organic brain syndromes. Staff resistance prevented Washburn & Vanicelli (1976) from allocating a reasonable proportion of patients, even after several weeks of in-patient care. However, attitudes must have been quite different in the study of Wilder *et al* (1966): 378 patients were randomly allocated and two-thirds of those referred to day care were accepted for treatment in that facility. The category 'too ill' for treatment in a day hospital must therefore be regarded as partly a reflection of staff attitudes.

Perhaps the best way to discover which patients can feasibly be treated in a day hospital is to study those who are allocated to such care, but have to be transferred to in-patient care during the study period. Such transfers are not rare. Wilder *et al* (1966) found it necessary to 'board' 40% of patients in the in-patient unit for short periods because of risk to the patient or others; this usually occurred during the first two weeks of treatment. Herz *et al* (1975) similarly boarded 22% of their day patients because of suicidal or violent behaviour. Such boarding lasted between 1 and 27 (mean 13.7) days. Attempts to treat patients primarily as day patients led Gudeman *et al* (1983) to admit 79% of patients for a mean of 10 days to the intensive care unit at the start of treatment.

The community-treatment programmes provided similar results. Fenton *et al* (1979) admitted 30% of patients for a mean of 1.8 days, and a further 8% required longer admission. Hoult (1986) needed in-patient care for those who 'were heavily sedated following immediate tranquillisation, who refused to cooperate thus needing compulsory treatment and those too disorganised in their behaviour to be treated immediately in the community'. Forty per cent of patients received in-patient treatment during the year, even though still under the care of the community team; 26% for less than one week and 14% for more than one week. Stein & Test (1980) found hospital admission necessary but rarely for more than two weeks. A few patients obviously spent considerable time in hospital, since the mean length of stay was 16 days. On the other hand, on no occasion did Dick *et al* (1985) find it necessary to transfer a patient to the in-patient unit following allocation to day hospital – presumably a reflection of their very stringent inclusion criteria.

None of these studies has provided separate data for those patients who could not be managed solely in the day hospital. If these patients could be identified by particular clinical or social characteristics, selection for admission to the day hospital could be put on a more secure footing, and future research could compare more accurately the effects of day and in-patient treatment for these subjects. It seems likely that a greater proportion of acutely ill patients can be managed in the day hospital than at present occurs. Doctors' resistance to day-hospital treatment is an important factor (Washburn *et al*, 1976; Platt *et al*, 1980; Rosie, 1987), but their resistance is unlikely to be overcome by the over-enthusiastic claims of those who run a community service and who minimise the importance of immediate, but brief, in-patient admission for a significant proportion of patients (Tantam, 1985; Hoult, 1986).

### Which patients benefit most from day-hospital treatment?

The ideal study to answer this question would involve a large cohort of day patients, so that those who did best could be identified, using matched in-patients as a control group. Unfortunately this has not been the design of most studies, which have simply aimed to demonstrate that day care is as good as in-patient care.

One uncontrolled study (Carney *et al*, 1970) did examine subgroups of day patients and found that many previous admissions, diagnosis of personality disorder, and admission for the purpose of general support predicted a poor outcome; these results would presumably hold for in-patient care also. In a controlled, but not a random-allocation study, Michaux *et al* (1973) noted some differences between schizophrenic and non-schizophrenic patients. The former showed slower but more lasting clinical improvement with day care, whereas in certain aspects of social role performance it was the non-schizophrenic patients whose improvement was greatest in the day-care group.

The only study of day care to have included sufficient numbers to permit examination of outcome by diagnosis was that of Wilder *et al* (1966). Female schizophrenics formed the only group that did better with day-hospital than in-patient treatment. Patients with affective psychosis did better with in-patient care, although a second admission was often required before full recovery was achieved. This latter result is similar to that of Kennedy & Hird (1980), who found that patients with affective psychosis did not benefit from a brief in-patient admission and needed a longer initial stay. This benefit was contrasted with the effect on alcoholics, whose second admission was not beneficial and whose care has been shown to be equally satisfactorily completed in a day hospital (Potamianos *et al*, 1986), casting doubt on the need to exclude such patients from day-hospital studies.

In their study of brief in-patient treatment followed by day care, Endicott *et al* (1979) isolated two factors that were significantly related to outcome according to treatment group. Those patients with high initial scores of 'overt anger' on the Psychiatric Status Schedule fared very much better on brief in-patient care followed by day care, rather than on in-patient care alone. Secondly, although patients with no previous admissions did equally well in either treatment group (in terms of days subsequently spent in the community), those with many previous admissions fared much worse with standard in-patient care.

Conversely, Hoult (1986) found the greatest difference in patients never previously admitted. Although numbers were small, these patients were more likely to be readmitted if their initial treatment was in-patient rather than community care.

## Possible reasons for superiority of day-hospital treatment

### Length of stay

One reason that day care might appear to bring about superior social functioning than in-patient care could be the longer duration of stay. Wilder *et al* (1966) noted that day care lasted eight weeks on average, compared with two weeks for in-patients, and in two other studies day care was twice as long as in-patient stay (Fink *et al*, 1978; Dick *et al*, 1985). Bowman *et al* (1983) found a similar duration of stay (36 and 42 days) and Gudeman *et al* (1985) found that their reorganisation towards greater day care did not significantly change length of stay. In only one study was in-patient stay longer (Herz *et al*, 1971), but Wilder *et al* (1966) suggested that day patients were discharged prematurely as they looked well, travelled alone and assumed home responsibilities.

The reasons for the longer stay of day patients need to be understood. One suggestion, concerning schizophrenic patients, is that recovery is slower in the day hospital (Michaux *et al*, 1973). Wilder *et al* (1966), however, explained that pressure on beds led to early discharge from their in-patient unit, whereas a planned course of family/occupational treatment in the day hospital took eight weeks. A day-hospital programme that sets satisfactory social functioning as its goal is likely to last longer and produce superior social functioning than an in-patient admission, which aims principally to induce symptom remission.

One study did hold the length of stay constant, thereby improving the scientific nature of the experiment (Penk *et al*, 1978), but this study suffered other shortcomings: the patient groups were 'matched' but not randomly allocated; follow-up assessments were performed on only 60% of subjects, and many would regard the treatment duration chosen (33 days) as rather short to obtain the maximum benefit from day care.

### Medication

Wilkinson (1984) listed medication as an important variable which has not been controlled in most studies. None of the studies of day care for acutely ill patients has examined this issue, but one study of day care following in-patient care (Glick *et al*, 1986) reported no difference in levels of medication between groups, who also showed no difference in outcome. Two studies of community programmes examined this factor. Fenton *et al* (1979) recorded similar amounts of medication being taken during the follow-up period, so this could not account for the differences found at follow-up. Stein & Test (1980), on the other hand, noted better compliance of their index patients compared with controls; this could have accounted for the success of this group, rather than psychosocial interventions. Compliance fell and symptoms relapsed after follow-up.

### Staffing levels

The *Lancet* (1985) stated that satisfactory day care required "a well-staffed unit that is prepared to accept a wide range of patients and include several treatment programmes that can be run simultaneously." Most studies have provided rather sparse details of staffing levels, and these can be related only to proportion of patients allocated, rather than outcome of treatment.

Dick *et al* (1985) noted that the staffing level of their day hospital was only one-third of that of Zwerling & Wilder's (1964); the latter was able to accept two-thirds of all patients presenting. In general, those studies with a high allocation rate had a high staff:patient ratio (Washburn *et al*, 1976; Penk *et al*, 1978; Gudeman *et al*, 1983).

More precise details were provided in the community studies: Hoult (1986), Fenton *et al*

(1979), and Stein & Test (1980) all had 24-hour nursing available, and had adequate numbers of staff to provide intensive treatment in the community. Stein and Test described 'assertive' staff, who visited the patient immediately if he failed to attend for work, and Hoult described how relatives could page a member of the team at any time. The close one-to-one work noted in these community programmes must have been a powerful therapeutic ingredient.

Whether the same is true of day hospitals will depend on numbers of staff. The well staffed day hospital envisaged in the *Lancet* (1985) would probably be able to offer closely supervised individual treatment, including 'chasing' the patient who is late or fails to attend. Thus greater staff availability in a day hospital compared with an in-patient unit could account for differences in outcome.

The only study that offered day and in-patient care in the same setting, thereby ensuring similar staff availability and treatment approach, was that of Herz *et al* (1971). The superior social functioning recorded at the end of this study could not therefore be attributed to different staffing levels. However, this was also the study in which day patients were discharged much more rapidly than in-patients, so the results could be attributed to early discharge, continued contact with the family, or a combination of both.

Fortunately a further study (Herz *et al*, 1975) indicated the importance of rapid return to the family when a patient is admitted to an in-patient unit. Brief in-patient stay led to the best social outcome, whether or not it was followed by day care, suggesting that rapid return to the family is more beneficial than prolonged in-patient treatment. In fact, only half of the patients allocated to day care actually attended the day hospital, suggesting that this treatment has little to offer after in-patient care. There is an important proviso to add to this conclusion. This study was confined to patients with families. The authors rightly point out that the results cannot be generalised to those without families (one-third of all admissions). It is possible that a family can provide the support and stimulus that the recently discharged patient needs, whereas those without such a family might benefit from further day care.

## Staff attitudes

Several authors have commented on the attitudes of staff involved in the switch from in-patient to day care in the experimental studies. Herz *et al* (1971) noted that the staff were initially antagonistic, later accepting but still preferring in-patient care for seriously ill patients. These authors stated that administrative pressure is necessary to overcome staff resistance. Washburn *et al* (1976) noted that staff resistance actually prevented random allocation of a proportion of patients. Junior medical staff were especially prone to warn their patients of the problems involved in day care, thereby decreasing the chances that the patient would agree. Unexplained administrative delays also meant that some patients for whom day care had been 'agreed' did not reach that treatment facility in time to be included in the project.

Fink *et al* (1978) also identified the bias of the clinicians involved. Most thought that in-patient care was preferable because it was safer and provided more intensive treatment, and some thought the separation from family was desirable. These authors noted that of ten clinicians receiving admissions, the three attached to the day hospital admitted 86% of the day-hospital patients, so the other seven clinicians must have treated their patients almost exclusively as in-patients. They also commented that the families of many patients were initially resistant to day care, but later reported more satisfaction from it.

Both Hogarty *et al* (1968) and Fink *et al* (1978) commented that relatives were initially resistant to the idea of day or community treatment, but were satisfied with it by the end of the treatment.

Platt *et al* (1980) noted that junior medical staff were more likely to admit to the in-patient unit than senior staff. Although Bowman *et al* (1983) found that severity of illness was recorded by doctors as their main reason for admission to the in-patient unit rather than the day hospital, the following reasons were also given: family's request (important in 66% of cases), referring doctor's request (50%), medical complication (26%), and the patient refusing day care (26%).

Lipsius (1973) studied the attitudes of both staff and patients directly. Both agreed that two-thirds of admissions could have been avoided! There was good agreement between staff and patients that most admissions of patients with personality disorders were unnecessary, and that half of those with schizophrenia could have been avoided, but there was disagreement regarding affective psychosis: many more patients than staff felt that these admissions could have been avoided.

Many staff evidently resist using day care as the primary treatment modality for acutely ill patients. This may prevent a random-allocation study from taking place (Platt *et al*, 1980), or cause the bias in allocations that Wilkinson (1984) criticised. It is certainly a practical problem for researchers. What is not known is whether negative attitudes of this sort influence the nature of the treatment offered.

Zwerling & Wilder (1964) commented that staff morale must be good to retain psychotic patients through a course of treatment. The descriptions of the community programmes (Stein & Test, 1980; Hoult, 1986) suggested high staff enthusiasm for the experimental treatment; the deterioration of the patients after the experiment ceased indicated that staff enthusiasm may have been a key ingredient. On the other hand, Gudeman *et al* (1985) reported consistent staff enthusiasm for primary day-hospital treatment over four years, suggesting that the change in attitude was more than a Hawthorne effect.

Staff attitudes would merit further study, especially as they are very likely to be related to the quality of care. If positive staff attitudes can be maintained in a day hospital this may be therapeutic for the patients, but it is also important to find out the determinants of negative attitudes, as these may prevent the implementation of the DHSS (1975) recommendations that day care should be used more widely for acutely ill patients.

### Cost-benefit studies

Day care is potentially much cheaper than in-patient care, because of the saving of overheads and staff at night and weekends. However, there is little empirical evidence to support this statement, and certainly the greater length of stay noted above will militate against this.

Gudeman *et al* (1985) recorded a 13.5% reduction in the cost of providing a service for acutely ill patients by changing from a predominantly in-patient service, to one in which nearly half the patients were treated as day patients without requiring in-patient facilities. Glick *et al* (1986) demonstrated that there was no clinical or social advantage to be gained from admission to a day hospital following in-patient stay. Since such treatment was ten times as expensive as out-patient care, it was considered a waste of money. However, neither of these studies were concerned with a typical day hospital admitting acutely ill patients directly from the community – the main focus of this review. Of the community programmes, one was found to be as expensive as in-patient care (Weisbrod *et al*, 1980), and one was found to be cheaper (Hoult, 1986).

### Conclusions

Greene & de la Cruz (1981) pointed out that it is far easier to design than execute laboratory-precise studies in social and community psychiatry. They quoted Cowen (1978), who stated that "ultimate conclusions about the effectiveness of community service programmes may . . . have to come about slowly and cumulatively, based on convergent findings from many individually less-than-ideal outcome studies". This is true of day-hospital research.

The first difficulty in evaluating previous research is the varying pattern of day hospitals. Some have taken patients direct from the community as an alternative to in-patient care (Herz *et al*, 1971; Michaux *et al*, 1973; Penk *et al*, 1978; Dick *et al*, 1985). Such studies have had to exclude the majority of patients presenting for admission because they are apparently too ill to be cared for primarily in the day hospital. Others have assessed day-hospital treatment as an adjunct to in-patient care of either short- or medium-term duration (Herz *et al*, 1975; Washburn & Vannicelli, 1976; Blick *et al*, 1986) and found that day care has little to offer in this respect, not least because many patients failed to attend. Finally, the innovation of Gudeman *et al* (1983, 1985) is interesting because all new admissions went directly to the day hospital, but over half were transferred to an intensive-care unit or residential 'inn' for overnight accommodation. The lesson to be learned from studies of community programmes (Fenton *et al*, 1979; Stein & Test, 1980; Hoult, 1986) seems to be that many acutely ill patients can be treated in the community, provided there are adequate staff and recourse to brief in-patient admission.

Thus the idea of demonstrating the 'superiority' of day-hospital treatment over in-patient treatment in a single ideal study is naive, and there are a number of different questions concerning day care that now need to be addressed. Studies of the highest possible standard will be required, but researchers must be realistic in their aims if they are not to fail in the manner of Platt *et al* (1980).

### Population

At present, the groups of patients who can feasibly be treated in a day hospital are best defined by exclusion. The largest group of exclusions has always been the category 'too ill', but this criterion depends, in part, on the attitude, number, and availability of staff. Our search for diagnostic or demographic factors to define those patients who cannot be treated in the day hospital has been unrewarding, and it is likely that specific symptoms or behaviour will provide the best indicators as to which patients require in-patient treatment, and which can be treated in the day hospital.

Two studies (Szmukler *et al*, 1981; Creed *et al*, 1989) have found that particular symptoms or behaviour are associated with compulsory admission.

If overactivity, self-neglect, and disturbed sleep are features that require in-patient care (Creed *et al*, 1989), these might be treated rapidly and enable transfer to day care. The suggestion of Michaux *et al* (1973) that psychotic symptoms resolve more quickly among in-patients, but social performance is more satisfactorily regained among day patients, must be studied further, because it might become clear that the two aims of treatment (symptom resolution and improved social performance) require different modes of treatment. It is hoped that further studies will publish details of previous psychiatric history, symptom levels, and social functioning, as well as demographic and diagnostic categories, so that the nature of the population being studied is clear. In addition, if changes in symptoms and social functioning are presented in detail, it should be possible to see which change most under what aspects of treatment. This is a necessary step away from previous studies, which have been content to demonstrate that day care is 'as good as' in-patient treatment.

### Possible advantages of day-hospital treatment

This review has indicated that there are a number of studies that indicate better social functioning for those patients treated in a day hospital rather than in an in-patient unit. This may simply reflect the difficulty in ensuring complete random allocation (Wilkinson, 1984). However, the reasons why day care might lead to better social functioning should become the focus of research. The possibilities are several: remaining in the community and/or remaining in contact with the family; specific programmes aimed at good social adjustment; more involvement of nursing staff in the community; and better compliance with medication after discharge. If these are defined, it will be possible to decide whether the apparently beneficial effects of day care can be included in in-patient programmes, or whether the act of admission itself prevents these. The specific value of 24-hour nursing care needs to be evaluated; it may help because in-patient admission is avoided, or it may allow quite a different form of staff–patient relationship that is helpful in improving social adjustment.

### Costs of day-hospital treatment

For some acutely ill patients, it is clear that day-hospital treatment can provide a potentially cheaper form of care than in-patient care. However, there are a number of factors to be considered if a day hospital is to accept severely ill patients and retain them throughout a course of treatment. Firstly, it must be adequately staffed with medical, psychology and occupational therapy personnel, as well as nursing staff. Secondly, a neighbouring in-patient unit is necessary to facilitate brief admission for some patients, and some continuity of care is necessary for such transfers. Thirdly, if recovery is slow in a day hospital, this may make it as expensive as brief in-patient care. Finally, according to Rosie's (1987) definition, diagnostic services are needed, so the day hospital must be situated within the general hospital psychiatry unit, not elsewhere as has been suggested (*Lancet*, 1985). This might also help to engender the right staff attitudes, as Fink *et al* (1978) noted that autonomous day hospitals can evolve their own 'exclusion criteria', which reduce the number and type of patients they will accept; this would militate against day hospitals being used for the acutely ill.

Day-hospital treatment should be evaluated as an important treatment in its own right, because of the potential advantages to the patient, and not simply as a cheap alternative to in-patient care. It clearly has much to offer a certain group of patients, but the nature of this group has yet to be defined.

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**Review Article**

# Genetics, Alzheimer's Disease and Senile Dementia

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Genetic factors in the aetiology of Alzheimer's disease (AD), are now being intensively investigated. The homogeneity of AD is under investigation. There are a few large kindreds with early onset of AD in whom transmission appears to be typically autosomal dominant, and 65% or more of the remaining cases at any age may have genetic aetiology. Both multifactorial and autosomal dominant inheritance with age-dependent expression have been proposed, but the late onset and death of unaffected relatives from competing causes make it difficult to choose between them. Lifetime risk gives the best estimate of incidence in family studies, but clinical and pathological criteria are not clear enough for confident diagnosis of AD in late old age. A role for external factors is indicated by twin studies, and the role of aluminium is currently under investigation. Molecular genetics promises to resolve many questions. The clinicians' role will be to provide well documented families for interdisciplinary research and to help in clarifying diagnosis in late old age.

The modern study of the genetics of senile dementia began with the work of Larsson *et al* (1963) in Sweden. These authors concluded that the disease was transmitted as an autosomal dominant disorder whose expression was highly age dependent. They considered that there was no genetic link with presenile Alzheimer's disease (PAD),which at that time was regarded as a separate disease. They found no evidence of temporal trends in prevalence or of sociomedical factors in aetiology.

Later, the clinicopathological similarities and the absence of any clear demarcation caused senile dementia and PAD to be regarded as one disease. In this review senile dementia is of Alzheimer type unless otherwise stated, and AD refers to the PAD–senile-dementia syndrome irrespective of age of onset. Recently, the homogeneity of AD has again become controversial. The neglected role of genetic factors is now being intensively investigated.

The new data include: (a) several large kindreds showing transmission of AD in a characteristic autosomal dominant pattern; (b) diagnostic criteria with improved predictive power (McKhann *et al*, 1984), family studies using modern methods to estimate risks in diseases with late onset, and the application of new models of modes of inheritance; and (c) the findings of molecular genetics. These developments are considered in the course of this review.

## Familial Alzheimer's disease (FAD)

Reports on seven large kindreds have been published in which AD appears to have been inherited as an autosomal dominant disorder over several generations (Feldman *et al*, 1963; Cook *et al*, 1979; Goudsmit *et al*, 1981; Nee *et al*, 1983; Foncin *et al*, 1985). The fact that onset is consistently early in all affected relatives (in the 50s or 40s or earlier) suggests that special factors control age of onset in these kindreds. The probability that any given ancestor has had the disease may be estimated by comparing his age at death with the mean age at death of known cases in the same family.

There are at least 40 other reported families in whom incidence of the disease over at least two generations is compatible with autosomal dominant inheritance (Cook *et al*, 1979; Nee *et al*, 1987). Together, these families suggest that a substantial proportion of cases, at least those of early onset, may have a genetic aetiology and be transmitted in this manner.

'FAD' is used when the familial pattern is that of autosomal dominance. The course, symptoms and pathology of FAD are, as a rule, quite typical (Davies, 1986). However, in studies of the pooled relatives of unselected probands, there are no secondary cases in about half the families, and different studies have favoured different modes of inheritance with differing implications. These are discussed below.

## Sporadic AD

The proportion of truly sporadic or non-genetic cases (phenocopies) is not known. According to Heston *et al* (1981), 40–60% of early-onset cases are sporadic, but there are no clinical or pathological differences between these and genetic cases. Chui *et al* (1985) found that after omitting non-informative families only 35% of cases were sporadic, and age of onset of AD did not differ appreciably whether there was a family history of dementia or not. However, the variable age of onset even within families makes it hard to define an illness as sporadic; when is the period of risk completed?

## Other neurodegenerative diseases and dementias

Alzheimer's disease may be compared with other neurodegenerative diseases and dementias. These fall into four groups: (a) transmissible diseases due to slow virus infection, such as Creutzfeldt–Jakob disease (CJD), some cases of the Gerstmann–Sträusler syndrome (GSS), kuru and scrapie; (b) the Guam Parkinson–dementia syndrome, which is believed to be the result of chronic environmental deficiencies; (c) Huntington's disease, with a genetic aetiology; and (d) diseases whose aetiology is unknown but has a genetic component in at least some cases, such as Pick's disease, dysphasic dementia (Morris *et al*, 1984), Parkinson's disease and AD itself.

Most cases of CJD are sporadic, but in about 15% the disease is transmitted by an autosomal dominant gene. Familial CJD could be due to inherited susceptibility to infection by the virus, as is known to occur in scrapie, or to integration of the virus in the genome and transmission in the gametes (Masters *et al*, 1981*a,b*; Baker *et al*, 1985). In families with FAD, occasional cases may occur resembling CJD clinically or, less often, histopathologically. However, AD itself is almost certainly not transmissible (Corsellis, 1986; Goudsmit, 1982).

In the Parkinson–dementia complex there are neurofibrillary tangles (NFTs) containing aluminium, but no senile plaques. There is no evidence of a genetic factor and the disease is probably due to chronic environmental deficiencies that affect mineral homeostasis, causing increased uptake of calcium and aluminium (Garruto *et al*, 1986). This is of special interest owing to the presence of aluminium in the NFTs and senile plaques in AD (Candy *et al*, 1986*a*).

The diseases in the fourth group are distinguished from each other by their pathology or biochemistry. Except for Parkinson's disease the other diseases mentioned above are all rare, while AD is common and has features, notably senile plaques, that are characteristic of ageing brains, which the others do not. Dementia in Parkinson's disease may be due to the superimposition of clinical or subclinical changes of AD type (Quinn *et al*, 1986). Thus, although these diseases share some common features and probably common mechanisms, their aetiologies appear to be distinct. In AD a role for both genetic and environmental factors seems quite probable.

## Twin studies

Twin studies are one of the classic methods of studying the relative importance of genetic and environmental factors in disease and of identifying the latter, but unbiased series of twins with AD are rare. In a recent series (Nee *et al*, 1987), 40% of 17 monozygotic pairs were concordant, but there were only five dizygotic pairs, of whom two were concordant. Concordance did not appear to be related to age at onset, but several of the unaffected twins of both types were still under 65 years of age and might yet have fallen ill. In one family the fact that monozygotic twins and their mother fell ill in the fourth decade but the grandparents were both healthy in their 70s may have been owing to mutation in the mother (Sharman *et al*, 1979).

The longest interval between onsets in monozygotic pairs was 12 years, and intervals of 6 and 15 years were reported in single pairs by Embry & Lippmann (1985) and by Cook *et al* (1981) respectively. The differences between monozygotic twins indicate that environmental factors are operating but no factors have so far been described (Jarvik *et al*, 1980; Nee *et al*, 1987). Longitudinal studies of larger unselected samples of monozygotic and dizygotic twins to compare concordance and to study environmental causes of differences between monozygotic pairs would be valuable.

## Family studies, lifetime risks and mode of inheritance

### Estimating the risk in diseases of late onset

In FAD there is a clustering of early onsets in the same families. This is found in only a very small proportion of families when the index cases (probands) are collected without regard to the presence or absence of secondary cases. The purpose of family studies is to obtain an unbiased estimate of the segregation ratio in the pooled relatives at risk, i.e. the ratio of affected to unaffected first-degree (or second-degree) relatives, to determine the mode of transmission by comparison with the classic Mendelian ratios. However, the segregation ratio is difficult to estimate when there seems to be no upper age limit to the period of risk and when the late expression of the gene could often be interrupted by death.

Weinberg's abridged method (Slater & Cowie, 1971) and other methods based on ratios of morbidity risks underestimate the risk compared with lifetime methods based on survival analysis, in which disease onset instead of death is the relevant event (Thompson & Weissman, 1981; Chase & Kramer, 1986). The lifetime risk may be defined as the proportion of a given population that would develop the disease if there were no premature deaths among unaffected persons (Thompson & Weissman, 1981), and is logically virtually equivalent to the segregation ratio. The risk may be calculated up to a very late age, e.g. 90 years, if data are available, but cumulative incidence may be estimated up to any given age and the curve extrapolated. No assumptions are made about the mode of inheritance, but with dominance the curve is expected to flatten out when all susceptible persons have fallen ill, while with multifactorial inheritance it would presumably continue to rise until everyone was affected. However, in a disease which is as common in old age as senile dementia, the interpretation of relatives' lifetime risks is complicated by the high risk in the general population (Heston, 1988; Mohs *et al*, 1988).

These methods make maximal use of the available information and adjust for death from competing causes. The Weinberg life table uses actuarial methods, but the Kaplan–Meier product-limit method is both logically superior and simpler to calculate (Chase *et al*, 1983; Sturt, 1986). The method is suitable for studying fairly small cohorts over long periods, as in family studies, and requires information about age at onset of illness among both living and dead relatives, and age at death of unaffected relatives (Thompson & Weissman, 1981).

### Familial risks and age of onset

Traditionally, PAD differs from senile dementia in age of onset, and associated genetic differences have been looked for. Heston *et al* (1981) studied the families of 125 cases with Alzheimer-type changes found in pathology records. Fifty-one probands and families with other kinds of dementia were the controls. The cumulative risks of AD for parents and siblings of all probands were higher than those in controls and in the general population. The diagnosis was confirmed in all autopsied patients. However, the difference was entirely due to a markedly increased risk in the siblings of the *younger* probands and the risk in siblings of probands whose illness had begun after the age of 70 was not greater than that in the general population. Unfortunately, the pathological criteria were not described in detail, and it seems possible that the brain lesions of some of the older probands were compatible with normal ageing.

This study pointed to a multifactorial illness with a genetic component. The risk in relatives seemed to depend on the age of onset in probands, and this could be a function of severity (earlier illnesses ran a shorter course and the clinical picture and pathology were more severe). The increased risk of disease in the siblings of younger probands when a parent was affected supported the multifactorial model, and the reported excess of cases of Down's syndrome only in the families of younger AD probands was compatible with this (Heston & White, 1978; Heston *et al*, 1981). New analyses of previously published data also give general support to this model (Wright & Whalley, 1984; Sturt, 1986);

However, the striking effect of probands' age of onset reported by Heston had not been found in the earlier, Scandinavian study of Larsson *et al* (1963) and was not confirmed by other investigators who found no appreciable difference in the incidence of AD in relatives of probands with onset before or after age 65 (Heyman *et al*, 1983; Chui *et al*, 1985; Breitner *et al*, 1988*b*). These studies appear to show that age of onset is a poor guide to the presence of a genetic aetiology. This point is also evident in a study of families with FAD in which age of onset ranged from 25 to 85 years (Powell & Folstein, 1984). However, AD is so common in the aged population that the specific genetic contribution appears to be relatively larger in early than in late onset cases (Wright & Whalley, 1984).

Heston *et al* (1981) found that members of the same family resembled each other in age of onset, but only to a certain extent. Mean age of onset among the relatives of younger probands (<65 years) was nearly 12 years older; 16% had their first symptoms after age 80 (Heston, 1985). However, significant within-family correlation suggests heterogeneity, and Breitner *et al* (1988*a*) showed statistically that after allowing for differences in longevity, 3% of relatives had onset at about 61 years, as distinct from the remainder with onset at 83 years. It may be remarked that, in general, age of onset in relatives is often uncertain, cannot reliably be inferred from age at death, and may be revised to an earlier age as historical information accumulates.

### Familial risks and aphasia/apraxia

Sjögren *et al* (1952) and Larsson *et al* (1963) had distinguished AD from senile dementia by three criteria: age at onset, rapidity of course, and the presence of aphasia, and found no genetic link.

However, when age of onset is unknown, the duration must also be unknown. As for aphasia, its recognition in deceased persons will usually depend on the availability of medical records.

However, Breitner & Folstein (1984), disregarding age of onset, argued that aphasia and apraxia were classic features of AD, and that their presence would increase homogeneity and might define a familial type of AD. These investigators used agraphia, the inability to write a legible and comprehensible sentence, as a convenient test for aphasia/apraxia, provided that the illness had lasted at least four years. In addition, there had to be at least one informant well versed in the patient's clinical and family history, and at least two relatives who had reached the age of 60. The probands were nursing-home residents. The lifetime risk of AD by age 90 in siblings and children of agraphic patients was found to be 55%, higher than previously reported and suggestive of dominant transmission. The risk in three control groups ranged from zero to 12%, the higher risk being found in spouses. By far the greatest contribution to the final risk was made by relatives in the oldest age group (80–89), where observations were few.

However, a cumulative incidence in first-degree relatives approaching 50% by age 86 was also found by Mohs *et al* (1987) and Breitner *et al* (1988*b*) using the criteria of the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) (McKhann *et al*, 1984). The risks were about four times greater than those found in the controls, and the annual incidence in the early ninth decade was about 4%. Diagnosis by the family history method, with multiple informants and standard questionnaires, was found to be reliable (Silverman *et al*, 1986).

## Biomathematical models

Breitner *et al* (1986*a*, *b*) studied the attributes of a late-onset age-dependent dominant disorder by constructing a biomathematical genetic model represented by the gamma or 'multiple-hit' distribution. This was chosen because its parameters (the number of insults ('hits') and the waiting time or delay before the hits produce their effect) appear to have biological meaning, e.g. hits may represent internal events or exposure to toxins. The model was based on the premise that at least some cases of AD are inherited through an autosomal dominant gene which, when expression is complete, results in a risk of about 50% in first-degree relatives. Best-fit values were applied to the data of Larsson *et al* (1963), Heston *et al* (1981) and Breitner & Folstein (1984) and the model was found to reflect accurately the age-specific risk of AD.

Under the premisses of the model, 100% of cases of AD with agraphia have a genetic aetiology, and these comprise the majority of all cases of AD. The highest likelihood of gene expression is in the ninth decade (though the actual incidence is highest earlier because of the age of the population). Owing to death from other causes, only a third of predisposed persons ever manifest the disease. If life expectation were to increase, many more people would be affected, but if the age of onset was postponed by just a few years, the majority of cases would be prevented (Breitner, 1987). There is a high probability of an individual case being hereditary, even when no affected relatives are known, and phenocopies are relatively rare; the presence of aphasia/apraxia is a better indication of genetic aetiology than family history (Breitner *et al*, 1986*a*, *b*).

Sturt (1986) applied a similar model to the early-onset cases reported by Sjögren *et al* (1952), combining Alzheimer's and Pick's disease, and found that the predicted median age of onset was significantly earlier in women than in men. There was no indication that with increasing age all relatives of AD probands would not eventually suffer from dementia. Sturt noted that the model fitted the data best if the risk period was assumed to start at birth (Sturt, 1986). The method has not yet been applied to more homogeneous groups with PAD.

In conclusion, there is disagreement about the effect of age of onset on the familial incidence, while agraphia as a criterion for selection gives results comparable to those using NINCDS criteria (McKhann *et al*, 1984). Particular symptoms have not been shown to affect the familial incidence of AD. The mode of inheritance and the true proportion of non-genetic cases remain controversial.

## Population studies

In the general population the cumulative incidence of senile dementia increases rapidly after age 75 and reaches about 20% by age 85–90 (Hagnell *et al*, 1983; Sluss *et al*, 1981), with an annual incidence of about 1.5% in the early ninth decade. This high risk is compatible with the presence of a gene with a frequency of 6–12% (Breitner *et al*, 1988*b*). However, after age 90 there are hardly any observations, so that the crucial question about whether the incidence of AD continues to increase or begins to fall in the tenth decade remains unanswered.

## Alzheimer's disease in extreme age

There is some evidence to suggest that AD becomes less common in extreme old age (Erlich & Davis, 1980; Jarvik *et al*, 1980). Breitner *et al* (1988*a*) found no new cases among 11 relatives aged 87–99. Post mortem, granulovacuolar and neurofibrillary changes were found to be commonest in the ninth decade and then declined in frequency (Peress *et al*, 1973). Tomlinson (1984) stated that about 20% of those at autopsy in the tenth decade either have no or very few plaques in their neocortex and suggested that they may be genetically resistant to AD.

A difficulty arises here because the diagnosis of AD in late old age is less well defined than at younger ages. In type-I disease, which is the type usually found in the brains of demented patients dying over the age of 80, the changes differ mainly in degree, not in kind, from those seen in the well preserved aged (Roth & Wischik, 1985).

Clinically, too, the distinction from normal ageing is not clearly defined (Brayne & Calloway, 1988). Fewer older than younger patients show the aphasia/apraxia (Blessed, 1984) said to be associated with a genetic aetiology. These patients could be developing the illness, but in that case it is surprising that the incidence of AD in relatives of non-agraphic probands was so low (Breitner & Folstein, 1984). The neuropathology of these cases was not described, but according to Blessed (1984) most persons with senile dementia without specific features do show the expected AD changes.

Family studies of type-I and type-II AD would help to show whether these are distinct diseases, but first some clarification of the clinical and pathological criteria of AD in extreme age is desirable and would permit more reliable estimates of incidence at this time.

### Risk factors in AD

Risk factors in AD have been reviewed at length by Rocca *et al* (1986) and by Henderson (1988). Apart from chronological age and the presence of Down's syndrome in probands, a history of dementia in relatives is the most consistent finding. Two studies of older patients were negative (Heston *et al*, 1981; Chandra *et al*, 1987), but in most of the studies PAD and senile dementia overlap in the families (Henderson, 1988). Incidence is not raised in spouses of AD patients.

Exposure to aluminium is currently being investigated as a risk factor. Aluminium is present in the form of aluminosilicates in the senile plaques and NFTs of senile and presenile patients with AD and of elderly mentally normal persons (Candy *et al*, 1986). Epidemiological inquiries have provided some evidence of a link between aluminium concentrations in water supplies and rates of dementia as estimated from death certification in Norway (Flaten, 1989) or from analysis of the records of neurodiagnostic centres in the UK (Martyn, 1988). A study of Israeli Jews showed highly significant differences in incidence of PAD according to country of origin (Treves *et al*, 1986). These findings are suggestive and further comparative regional studies are called for.

### Cytogenetics

Ageing is associated with an increase in aneuploidy in cultured lymphocytes, probably due to mitotic non-dysjunction. When patients with senile dementia were reported to have more hypodiploid lymphocytes than other demented patients or age-matched controls, it was thought that brain function might be impaired because of aneuploidy in neuroglial cells (adult neurons do not divide). However, the link between aneuploidy and senile dementia has been found inconsistently (studies summarised by Kay (1986)) and is confined to females (Matsuyama *et al*, 1985; Wright & Whalley, 1984).

Another possible connection between AD and ageing is the *in vitro* hypersensitivity of cultured AD fibroblasts to X-irradiation and radiomimetic chemicals, which is also found in Parkinson's disease and in rare diseases characterised by premature ageing (Robbins *et al*, 1984; Scudiero *et al*, 1986). The postulated cause is a generalised defect in repair of DNA damage from intracellular metabolites, which *in vivo* might result in premature death of neurons, cells that are terminally differentiated and more sensitive to DNA damage than replicating cells (Wright & Whalley, 1984). The hypersensitivity may be present in both sporadic and genetic forms of AD; the former might be due to a dominant somatic mutation during embryogenesis, while in the latter the mutation would occur in the gametes and could be inherited (Robbins *et al*, 1984).

### Molecular biology

The implications of molecular genetics for research in psychiatry were reviewed by Baron & Rainer (1988). Progress is rapid and a solution to many of the problems discussed above seems possible. Davies (1986) expressed the hope that by concerted effort the site of the gene defect in FAD would be located within a few years. This has already been achieved, and its identification is likely to follow.

#### Amyloid and the $\beta$-protein gene

The composition of the paired helical filaments and microtubular protein of NFTs is still unclear, but the amyloid fibrils present in senile plaques are now known to contain amyloid β-protein (AP), so-called because of its partial β-pleated sheet structure. Amyloid, or A4, protein is a hydrophobic polypeptide of low molecular mass which aggregates to form the protein of plaque cores, the inorganic component of which is aluminium silicate. Plaques are especially associated with AD and the normal ageing brain, whereas NFTs are less specific.

Restriction maps of cDNA clones show that AP is a fragment of a much larger protein molecule containing cell-surface receptor sites (Goldgaber *et al*, 1987; Kang *et al*, 1987; Tanzi *et al*, 1987*a*). This precursor protein appears to be a natural constituent of certain cortical cells in monkeys and humans, but its distribution differs from that of NFTs (Bahmanyar *et al*, 1987). It may be formed in glial cells as well as in neurons, in normal tissues outside the brain, and in brains of distantly related mammalian species, indicating that the gene is highly conserved in evolution (Tanzi *et al*, 1987*a*). Aged mammals may provide suitable models for studying brain amyloid formation in AD (Selkoe *et al*, 1987).

The senile plaques and cerebrovascular amyloid deposited in AD and in ageing brain have been found to be antigenically related and to have similar amino-acid compositions (Wong *et al*, 1985). The same polypeptide subunit is reported to be present also in NFTs (Masters *et al*, 1985*a*) and is abundant in NFTs in Guam Parkinson–dementia, in which, however, senile plaques and cerebrovascular deposits are absent (Guiroy *et al*, 1987). A virtually identical polypeptide is found in the senile plaques and vascular deposits that occur in older persons with Down's syndrome (Masters *et al*, 1985*b*). These findings suggest a common pathogenesis for AP in these different sites and diseases.

The aluminium present in these structures might enter the brain in abnormal quantities as a result of weakening of the blood–brain barrier by a gene affecting membrane permeability (Crapper McLachlan, 1986). Such a defect is hypothesised to play a central role in the aetiology of AD (Hardy *et al*, 1986). Aluminium might also enter the brain in special lipid-soluble form (Crapper McLachlan, 1986), or as aluminosilicate dust via the olfactory bulb (Roberts, 1986), or via the iron-transport system (Candy *et al*, 1988).

Since persons with Down's syndrome consistently develop Alzheimer-type changes in middle age, studies were directed to chromosome 21. The gene coding for the AP was, in fact, located on the long arm of chromosome 21, although outside the obligate Down's syndrome region, which occupies the distal third of the long arm of the chromosome (Delabar *et al*, 1987; Goldgaber *et al*, 1987; Kang *et al*, 1987; Tanzi *et al*, 1987*a*). The gene is overexpressed in brain tissue with trisomy-21 to a degree which is commensurate with a dosage effect (Tanzi *et al*, 1987*a*). At this point the AP gene was a strong candidate for being the gene responsible for FAD.

This idea was reinforced when Schweber (1985), endeavouring to link AD in normal subjects with chromosome 21, proposed that the critical segment of chromosome 21 (where the AP gene was expected to be), which is duplicated in full in Down's syndrome, might be duplicated in part in AD, and so cause the lesions common to these two disorders. This hypothesis was first supported (Delabar *et al*, 1987) but was not confirmed by later observations, either in cases of FAD (Podlisny *et al*, 1988; Tanzi *et al*, 1987*c*; Van Broeckhoven *et al*, 1987) or in sporadic AD (St George-Hyslop *et al*, 1987*b*). Not only was there no duplication, but linkage studies soon showed that the two genes, although on the same chromosome, were separated by a gap of some eight million base pairs (Tanzi *et al*, 1987*b*).

It was concluded that the AP gene does not constitute the primary defect in AD, and that the abnormal amyloid must arise in some other way. However, it is possible that genetic variation at the AP locus may still be involved in the expression of AD. The A4 amyloid mRNA has, for instance, been found to exist in alternative forms, one of which is present in large amounts in the brains of AD and Down's syndrome patients, and encodes a protein sequence similar to that of known protease inhibitors controlling proteolysis (Ponte *et al*, 1988; Tanzi *et al*, 1988). These enzymes could be involved in the aberrant processing of the precursor protein and cause deposition of AP (Kitaguchi *et al*, 1988).

## Linkage analysis and the FAD gene

Study of histocompatibility antigens in AD has been disappointing (Renvoize, 1984) although association of senile dementia with a complement component locus on chromosome 6 linked to human leucocyte antigens, which may act against viral infection, is reported (Nerl *et al*, 1984).

Linkage studies using anonymous polymorphic DNA markers have been informative. The localisation of the FAD gene was studied in four large families with early-onset, pathologically proven FAD. The gene was found to map to chromosome 21, although not in the distal 21q22 region associated with Down's syndrome, and proximal to the AP gene and S1/S11 loci (St George-Hyslop *et al*, 1987*a*; Tanzi *et al*, 1987*b*). (It is not known whether persons with Down's syndrome trisomic *only* for the 21q22 band develop AD.)

The localisation of a FAD gene at a chromosome 21 locus separate from the AP gene locus was also shown in a study of two large kindreds, in one of which the age of onset was always very early, and in the other was about a mean of 65 years (Van Broeckhoven *et al*, 1987). To date, all analyses have been compatible with the FAD gene being situated on chromosome 21, near the markers S1/S11 and S16, and there is no evidence so far for the presence of other FAD loci. This is true for both early and late onsets, although detailed family pedigrees are not yet available. The next stage is to locate precisely, to isolate and to characterise the gene.

Unfortunately, FAD families are often not informative for linkage studies, because of the scarcity of families in which members of two generations with the disease are still living and able to provide blood samples (St George-Hyslop *et al*, 1987*c*). Linkage studies may, therefore, in practice be mainly carried out on siblings, ideally on several siblings belonging to the same large kindreds that may be presumed to be genetically homogeneous. The establishment of permanent cell lines from carefully studied AD families would expedite progress in linkage studies (Davies, 1986). A strategy which avoids the need to find large kindreds and can be used when the mode of transmission is unknown, is to use affected sibling pairs for linkage analysis (Roses, 1986).

## Conclusions

Conservatively, at least 50% of families ascertained by the presence of an index case with AD contain secondary cases. That this is due to genetic causes is made plausible by the discovery of a FAD gene on chromosome 21. Familial Alzheimer's disease does not differ from other cases of AD clinically or pathologically. The locus of this gene on chromosome 21 also explains the association of AD with Down's syndrome.

In FAD there is early onset of illness and a high correlation in age of onset within families. This would result in the regular manifestation of the disease that is seen in these families. In other families, in which the age of onset is variable and often late in life, death of predisposed relatives may occur before the disease shows itself, and so conceals the genetic basis. Although speculative, this hypothesis is supported by family studies showing that AD can be diagnosed in about 50% of first-degree relatives by the age of 90, compared with about 10% of controls, and by a model representing autosomal dominant inheritance with markedly age-dependent expression, which fits the empirical data well. The proportion of non-genetic cases is small when probands are diagnosed with care.

If this hypothesis is correct, most or all cases of senile dementia have a genetic basis. This does not exclude the presence of subgroups with, for instance, early onset or specific symptoms, or interaction of genetic factors with environment. In future, linkage studies with anonymous markers will help to evaluate genetic causes of AD.

The FAD gene locus is separate from the AP gene locus on chromosome 21, and its nature and activity are unknown. The next step is to identify the locus precisely, and to isolate the gene and characterise it and the proteins encoded by it. This will require many more linkage studies of well documented and carefully diagnosed families. Further linkage studies will determine whether there is only one locus, and if this is the case, relatives can be offered pre-symptomatic diagnosis and genetic counselling. Characterisation of the abnormal protein should help us to understand the neuropathology of AD in general. It will be possible to assess what proportion of sporadic cases are truly non-genetic (Gusella, 1986).

So far, no definite risk factors except familial incidence and Down's syndrome have been identified, apart from chronological age. However, the wide differences in age of onset within families and especially between monozygotic twins, and between monozygotic twins discordant for AD, indicate that non-genetic factors play a role. Currently, there is a *prima facie* case for epidemiological studies to establish whether or not exposure to aluminium is correlated with the incidence of AD. Non-genetic and genetic factors should be studied in parallel. Case-control studies, and in particular longitudinal studies of unbiased samples of monozygotic and dizygotic twins, should help to identify this and other risk factors, provided that events and exposures in early life are included. Close collaboration with national lay associations supportive of research will be necessary.

The case for an autosomal dominant mode of transmission would be strengthened if the incidence in the general population and in relatives of probands was shown to fall off in the tenth decade, which would suggest that all predisposed persons had already become ill or died. There is some evidence that this may be so, but observations are very scanty. The alternative is that incidence continues to rise with age, which would be compatible with inheritance on a multifactorial, polygenic basis, emphasise the association with age, and support an accelerated ageing theory of AD. These theories could overlap.

A difficulty in choosing between them on the basis of epidemiological and family data is that diagnosis of AD is comparatively poorly defined at advanced ages. Both clinically and pathologically, distinctions from normal ageing seem to depend on differences in degree. Quantitative measures of cognitive decline may be necessary in addition to tests for special symptoms and detailed specification of syndromes. The diagnosis of AD in late old age requires further study and presents a rich field for sustained collaboration between clinicians, neuropsychologists and pathologists.

## Addendum

Two groups have now reported failure to find linkage between FAD and markers on the long arm of chromosome 21, including the AP gene, in both early-onset and late-onset FAD (Schellenberg *et al*, 1988; Roses *et al*, 1988). If confirmed, this suggests genetic heterogeneity, and with more than one AD gene locus at different chromosome sites, linkage analysis may be much more difficult.

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***Review Article***

# Bipolar Affective Disorder: Causes and Prevention of Relapse

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The majority of patients with bipolar affective disorder relapse at least once during their lifetime, most several times, often with disastrous consequences. In this review we examine those factors which appear to play a facilitatory and in some cases, a causal role in determining whether a relapse will occur and, if so, when. Such factors include: the season of the year, with most admissions for mania in the British Isles occurring in the summer months; change in endocrine status, as after childbirth or when there is impaired thyroid function; treatment with drugs affecting central monoamine, particularly dopamine, neurotransmission; untoward life events. We evaluate the relative efficacy of treatments for the prevention of relapse, such as lithium, carbamazepine and antipsychotics, in the context of social and psychological support systems.

Bipolar affective disorder, or manic–depressive psychosis to give it its more traditional name, is a chronic condition which runs an episodic course. Typically, illness episodes alternate with periods of complete recovery and normal function. The prevention of relapses, with their many adverse psychological, social, and economic consequences, continues to present a major challenge to clinical psychiatry.

To meet this challenge, effective knowledge is required of the factors associated with the occurrence and the prevention of relapse; these include meteorological, neurochemical, endocrine, psychological, social and pharmacological events. This review summarises existing knowledge about the causation and prevention of relapse in bipolar illness, integrating the findings from a variety of scientific approaches.

## Classification and natural history

### Classification

Bipolar illness was first clearly delineated by Emil Kraepelin (1921), who distinguished it from other major psychiatric conditions on the basis of symptomatology and clinical course. For Kraepelin, manic–depressive illness could be confined to either depressive or manic episodes, with only a proportion of patients experiencing both. Leonhard (1959), refining the concept, distinguished those depressed patients who had previously had a manic episode from those whose illness had always been depressive. The former he called bipolar and the latter unipolar. In recent years, the term 'bipolar disorder' has come to include all patients with mania, whether or not they have ever been seriously depressed (DSM–III) (American Psychiatric Association, 1980). ICD–9 (World Health Organization, 1978), on the other hand, divides the category manic–depressive psychosis into manic, depressive and circular types. According to the DSM–III criteria, mania is characterised by: pronounced elevation of mood or marked irritability accompanied by overactivity, with a decreased sleep requirement; pressured talk and racing thoughts; expansive, even grandiose ideas; distractability sometimes leading to flight of ideas; and social and sexual disinhibition.

Hypomania is a less severe form of mania (Coryell *et al*, 1987). Whatever the validity of such a distinction, the research diagnostic criteria distinguish between bipolar I disorder, in which frank mania has occurred, and bipolar II disorder, with hypomania only (Spitzer *et al*, 1978).

Patients with unipolar mania seem indistinguishable on genetic and clinical grounds from patients with both manic and depressive episodes, but appear to differ from patients with unipolar depression (Abrams & Taylor, 1974; Nurnberger *et al*, 1979; Abrams *et al*, 1979; Pfohl *et al*, 1982). Recently, however, doubts have been cast on the appropriateness of classifying bipolar illness with unipolar mania (Nurnberger & Gershon, 1984) and on the genetic homogeneity of bipolar disorder (Robertson, 1987).

The term 'secondary mania' refers to a manic episode which follows, and is probably precipitated by, physical illness, such as neoplasia or infections, or drugs (Krauthammer & Klerman, 1978). Whether or not the patients who show this response are in some way predisposed to develop a manic syndrome remains uncertain.

Bipolar disorder has been recognised world-wide and described in many diverse ethnic groups. The reported female:male ratio lies between 1.3:1 and 2:1, and lifetime prevalence from 0.24% in New Zealand (James & Chapman, 1975) to 0.97% in Iceland (Boyd & Weissman, 1982).

## Course of illness

Over 20 studies, virtually all retrospective, have plotted the course of bipolar illness. Even when prospective, the information has usually been based on an anamnestic interview covering several past years. Such approaches have obvious limitations: the diagnosis is often uncertain; not all recurrences, particularly those that are less severe, will be recorded and remembered; the information regarding possible precipitation may be sketchy; the assessment of the mental state at relapse by different clinicians is likely to be uneven; the length of follow-up varies considerably from study to study; different definitions of relapse and recovery may be used. Despite these limitations, there is general agreement that bipolar illness is episodic in course, with recovery from the first attack. Many patients have one or more further attacks, after varying intervals.

## How many patients relapse?

The relevant studies are summarised in Table I. In contrast to Kraepelin's original view that manic-depressive insanity has a good prognosis, subsequent follow-up studies, of longer duration and with more thorough assessment, indicate a high relapse rate (Angst *et al*, 1973). It appears that some two-thirds to three-quarters of patients admitted with manic illness will suffer at least one relapse requiring hospital admission (Goodwin & Jamison, 1984). The number of less severe recurrences is likely to be even higher.

TABLE I
*Relapse rates in bipolar patients*

| *Reference* | *Population* | *No. of bipolar patients* | *Percentage relapsing or remaining unwell* |
|---|---|---|---|
| Kraepelin (1921) | | 459 | 35 |
| Pollack (1931) | NY State Department mental hygiene records 1909–20 | 1890 | 45 |
| Rennie (1942) | Admissions to Johns Hopkins, 1913–16. Letter or social work follow-up | 208 | 99 |
| Lundquist (1945) | All 1st admissions to 1 Swedish hospital. Interviewed, anamnesis | 103 | 45 |
| Stendstedt (1959) | All cases in Swedish region, 1914–48. Record review | 49 | 68 |
| Astrup *et al* (1959) | 1st admissions to 1 Norwegian hospital, 1938–59. Most interviewed, anamnesis | 42 | |
| Perris (1966) | Admissions to 1 Swedish hospital, 1950–63. Personal follow-up, anamnesis | 97 | 48 (male)<br>67 (female) |
| Bratfos & Haug (1968) | Admissions to University of Oslo, 1952–61. Mean follow-up 6 years | 42 | 93 |
| Winokur *et al* (1969) | Admissions to University of Iowa, mania. Follow-up by interview at 1.3–3 years | 32 | 86 |
| Shobe & Brion (1971) | Patients treated by 1 author. 14–10-year follow-up by interview | 15 | (8 individuals 'not recovered') |
| Angst *et al* (1973) | Retrospective case-note study from 7 centres in 5 countries | 393 | 99.5 |
| Carlson *et al* (1974) | Admissions to NIMH with mania. Follow-up for 0.5–9 years by interview or telephone | 53 | 43 |
| Winokur (1975) | Admissions to University of Iowa, 1934–44, with mania | 100 | 63 (male)<br>47 (female) |
| Fleiss *et al* (1978) | Patients attending a lithium clinic in NY, before March 1974. Other US centres | 136<br>236 | 50 (if on lithium)<br>90 (if not on lithium) |
| Kukopulos & Reginald (1980) | Patients treated with lithium in Athens, 1963–79 | 213 | 28 (poor response)<br>31 (partial response) |
| Angst (1981) | Admissions to University of Zurich, 1959–63. Follow-up every 5 years by interview, anamnesis | 95 | 88 |
| Bland & Orn (1982) | 1st admissions in Alberta 1961–65. Follow-up for 15–19 years | 27 | 74 |

There is no consistent gender difference reported in relapse rate. Perris (1966) gave figures of 67% for females and 48% for males, while Winokur (1975) reversed this ratio, with figures of 63% for males and 47% for females. Several authors state that patients whose illnesses began at a younger age are more likely to relapse (Rennie, 1942; Lundquist, 1945).

### Frequency of relapse

Of those who relapse, most do so three or more times (Pollack, 1931; Lundquist, 1945; Angst, 1981), with the frequency varying over time and between patients. At one extreme are those rare patients who oscillate from mania to depression and back again every 48 hours (Jenner *et al*, 1968); less than 20 of these have been reported in the world literature. Others, termed 'rapid cyclers', experience more than four affective illnesses in the course of a year (Dunner *et al*, 1977). When ill, these patients are phenomenologically indistinguishable from other bipolar patients, but females are over-represented. There is some evidence to suggest that subclinical hypothyroidism may play a role in predisposing patients to rapid cycling (Extein *et al*, 1982; Cowdry *et al*, 1983). Tricyclic antidepressant drugs can act as a precipitant to rapid cycling (Wehr & Goodwin, 1987). Although Kraepelin (1921) and later Lundquist (1945) believed that the frequency of relapse did not change during the patient's lifetime, more recent surveys suggest that an acceleration of relapse frequency occurs with time in a proportion (Cutler & Post, 1982; Roy-Byrne *et al*, 1985).

### Outcome

The mortality rate for patients with bipolar disorder is two to three times greater than that for the general population (Tsuang & Woolson, 1977; Goodwin & Jamison, 1984). Not only is there an increased mortality from suicide (Black *et al*, 1987), there are indications that the mortality rate from cardiovascular deaths is also higher (Weeke *et al*, 1987). A disturbingly high proportion of patients become severely socially and economically disadvantaged (Winokur *et al*, 1969). In a series of 53 bipolar patients admitted to the clinical research wards of the National Institute for Mental Health, less than half returned to their previous jobs after being discharged (Carlson *et al*, 1974), and 14 (29%) were described as 'functionally impaired' at follow-up, with a third showing work impairment two years later (Coryell *et al*, 1987). In a Canadian sample, patients with bipolar illness had lost over 11% of their productive time in the 15–20 years following their index admission (Bland & Orn, 1982). In addition to the effects on their own lives, patients with recurrent bipolar disorder can place a considerable social and economic burden on their families (Fadden *et al*, 1987).

## The effects of season

The relationship between mood disorders and changes of season was noted by the early Greek physicians Arateus of Capadoca (cited by Luce, 1973) and Hippocrates (1938 publication). This observation lay fallow until relatively modern times, when Esquirol (1845, first published 1838) remarked on the increased frequency of insanity during the summer months, and Durkheim (1897) described a seasonal fluctuation of suicides. More recently, the association between relapse of bipolar disorder and seasonal change has been studied in greater detail, using hospital admission statistics and longitudinal case studies.

### Hospital admission statistics

A careful statistical analysis by Slater (1938) of Kraepelin's original data of hospital admissions for all affective disorder, both unipolar and bipolar, revealed a marked summer peak. In contrast, data collected some 70 years later in four European centres (Basle, Berlin, Lubeck and Zurich), pointed to peak admissions in April (spring) and October (autumn) (Angst *et al*, 1968). Data from several other countries show a peak of admissions, mainly for depression, in the spring, with some showing an autumn peak as well (Rosenthal *et al*, 1983).

Admissions for mania also show a marked seasonal pattern. In the British Isles there is a clear peak in June–July (early to mid-summer) (Walter, 1977; Hare & Walter, 1978; Myers & Davies, 1978; Carney, 1989). This summer peak has been variously attributed to a rise in ambient temperature (Myers & Davies, 1978), the increase in length of day (Symonds & Williams, 1976), the amount of sunshine or air ionisation (Carney, 1988), and relative humidity (Mawson & Smith, 1981). As all these variables correlate highly with each other, the relative significance of each is unclear.

In other countries, the seasonal pattern of admissions for mania varies. In Hungary during 1972–77, there were more hospital admissions for mania in spring and autumn (Rihmer, 1980), whereas in adjoining Yugoslavia, there was only a spring peak (Demirovic & Zec, unpublished). In Greece, during the years 1978–79, two peaks occurred, one in May–June (late spring, early summer), the second in September–October (autumn) (Frangos *et al*, 1980).

The data from North America are sparse and inconsistent (Milstein *et al*, 1976; Eastwood & Stiasny, 1978). Hawaii (20° north), which has an almost constant temperature but a definite seasonal variation in length of day, shows a July (mid-summer) peak in admissions for mania (Brewerton & McClaughlin, unpublished).

In the southern hemisphere, a peak incidence "of striking magnitude" in the admission rates for mania in New South Wales, during September and November (spring) has been reported (Parker & Walter, 1982); Western Australia shows a similar pattern (Spencer, personal communication). In New Zealand, admission rates for mania over five years showed an overall peak in late spring, early summer, but with considerable variation from year to year (Joyce, personal communication).

Even given the limited data and some inconsistencies, there does appear to be an overall pattern. In more temperate climates, as in the British Isles and New Zealand, or where there is little seasonal variation in temperature, as in Hawaii, the peak of manic admissions is in the summer. In countries with greater temperature swings, such as Hungary, Yugoslavia and Greece, the peak is in spring. This might imply an interaction of temperature and length of day. It is unlikely to be due simply to differences to latitude, because in Ontario, which spans the latitudes of much of Europe, there appears to be no seasonal variation in admission rates for mania (Eastwood & Stiasny, 1978).

### *Other biological rhythms*

The periodicity of relapse seen in some bipolar patients raises questions about the relationship of the illness to other biological rhythms. These include daily, monthly and yearly rhythms. In the few patients with a regular 48-hour manic–depressive cycle, the mood cycle and diurnal rhythms appear to be coupled, but little is known about the nature of the link. Concerning monthly rhythms, three patients whose manic–depressive episodes appeared to be linked to their menstrual cycles were described by Wehr (1984). Subsequent longitudinal observations over many months showed the two cycles to be essentially independent. It is possible that a manic–depressive cycle could be coupled to or entrained by a normal biological rhythm and then display its periodicity.

The annual periodicity, as shown in seasonal variation, remains the best-documented example of the periodicity of bipolar illness being associated with an endogenous biological rhythm.

### **Longitudinal studies**

Another way to examine the relationship of seasonal variation to the onset and recurrence of bipolar disorder episodes is to follow individual patients over time. Although Kraepelin (1921) had noted a seasonal pattern of illness in 5% of his manic–depressive patients, little further interest was taken in this phenomenon until recently. Of 39 patients attending a clinic in Maryland, USA, for bipolar disorder, nine reported seasonal mood fluctuations (Rosenthal *et al*, 1984). These authors also described a further series of 29 patients recruited through a newspaper article, who regularly became depressed in the autumn or winter, with an elevation of mood, sometimes to the point of mild mania, the following spring or summer. They gave the name 'seasonal affective disorder' (SAD) to this condition. Twenty-five of their 29 patients were female, and 27 fulfilled Research Diagnostic Criteria (Spitzer *et al*, 1978) for bipolar affective disorder, five being classified as bipolar I, 22 as bipolar II. When depressed, most showed atypical features, including increased appetite, sometimes with carbohydrate craving, and increased sleep. Several related their seasonal depression to changes in length of day, and some found that holidaying in the sun improved their depression. While depressive symptoms could occur at other times of the year, they were less severe and shorter-lived than in the winter and more likely to have followed a stressful life event. The majority (62%) became depressed the subsequent winter. Over two-thirds had a family history of affective disorder in at least one first-degree relative, but this was seasonal in only five. Similar patients have been described in the United Kingdom (Thompson & Isaacs, 1988), and Switzerland (Wirz-Justice *et al*, 1986).

Is SAD a variant of bipolar disorder? The high frequency of clear-cut bipolar episodes with manic episodes occurring in the summer would suggest that it was. However, a detailed comparison between the United Kingdom SAD bipolar patients revealed differences (Thompson & Isaacs, 1988). The SAD bipolar patients were more likely than other bipolar patients to display hypersomnia and increased appetite when depressed. It is not certain what proportion of bipolar patients can be classified as suffering from SAD. Detailed longitudinal prospective studies of unselected bipolar patients are required to resolve this issue, which has important theoretical and therapeutic implications.

In the United States, a newspaper-based survey revealed that the prevalence of SAD was highly correlated with latitude. The shorter the length of day, the greater the cloudiness, and the lower the temperature during winter months, the greater the number of self-reports of SAD (Potkin *et al*, 1986). Longitude was not found to be important. Similarly, in Norway, SAD was self-reported more frequently in the north, being highest in those areas lying within the Arctic Circle (Lingjaerde *et al*, 1986).

Although longitude does not in itself appear to be related to the incidence of mood disorders, examination of psychiatrically ill patients arriving at a London airport revealed a significant increase in depressive syndromes among patients flying east to west, when compared with those flying west to east (Jauhar & Weller, 1982). Conversely, manic symptoms were seen more frequently in patients who had flown from west to east. In keeping with these findings are the reported effects of changes associated with the starting and ending of daylight-saving time in the United States (Bick, unpublished). It has been suggested that alterations in sleep pattern produces such effects (Wehr *et al*, 1987).

## Biological factors

On the basis of present evidence, it appears that the changes in mood seen in patients with bipolar disorder reflect alterations in the activity of one or more of the primary neurotransmitter systems in the brain, with the neuropeptides possibly exerting a modulating role (Gold & Rubinow, 1987).

### Neurotransmitters

The potential role played by neurotransmitters in the pathogenesis of bipolar illness has been revealed by studying the alterations in clinical state produced by centrally acting receptor agonist and antagonist drugs.

#### *Dopamine*

In patients predisposed to bipolar illness, the administration of drugs that selectively increase central dopamine activity can readily precipitate a manic episode, whereas the same drugs administered to patients who do not have a past history of bipolar illness are without such effect (Murphy, 1972; Gerner *et al*, 1976; Silverstone, 1984). Conversely, drugs which reduce central dopamine neurotransmission ameliorate the symptoms of mania (Cookson & Silverstone, 1976; Post *et al*, 1980; Cookson *et al*, 1981). Although some authors consider that neuroleptics merely reduce psychomotor activity without affecting the core symptoms of mania (Shopsin *et al*, 1975), in one study, pimozide, a drug that selectively blocks dopamine receptors, exerted a comprehensive antimanic effect (Cookson *et al*, 1981). These clear-cut responses to drugs with a selective action on central dopamine neurotransmission suggests that dopaminergic systems are implicated in the pathogenesis of bipolar mood swings (Silverstone, 1985; Jimerson, 1987).

Recent genetic evidence provides further support for the involvement of dopamine in the pathogenesis of bipolar illness in some affected families. The relevant gene has been located in chromosome 11, close to, and possibly identical with, the locus for tyrosine hydroxylase, the rate-limiting enzyme for the synthesis of dopamine (Egeland *et al*, 1987). However, few affected pedigrees show this linkage to chromosome 11 (Hodgkinson *et al*, 1987).

#### *Noradrenaline*

Although noradrenaline was allocated a key role in the monoamine hypothesis of affective disorders as originally promulgated (Schildkraut, 1965), its involvement in bipolar illness is less well established than in unipolar depression. As with dopamine, drugs which activate or inhibit noradrenergic receptors can influence the clinical course. This is particularly true for alpha-2 receptors. Yohimbine, an alpha-2 receptor antagonist, has been found to precipitate manic episodes in predisposed individuals (Price *et al*, 1984), whereas clonidine, an alpha-2 receptor agonist, can improve mania (Hardy *et al*, 1986).

#### *Acetylcholine*

Consistent with acetylcholine playing a role in the pathogenesis of mania (Janowsky *et al*, 1973; Davis *et al*, 1978) is a report that lecithin (a precursor of brain acetylcholine) was more effective than placebo when added to concurrent medication in five out of six manic patients (Cohen *et al*, 1982). Furthermore, the rebound mania sometimes seen after the withdrawal of antidepressant drugs with pronounced anticholinergic properties, may reflect drug-induced supersensitivity of muscarinic receptors (Dilsaver *et al*, 1987).

#### *Gamma-aminobutyric acid (GABA)*

A number of anticonvulsant drugs have been shown to be effective in reducing manic symptoms. Among these, the benzodiazepines are thought to act through enhancing GABA neurotransmission. One, clonazepam, was found to be more effective than lithium in a double-blind cross-over trial involving 12 patients (Chouinard *et al*, 1983). Another anticonvulsant, sodium valproate, which possibly acts by increasing the availability of GABA in the brain, was shown to be more effective than placebo in relieving manic symptoms (Emrich *et al*, 1985). Carbamazepine has also been found to be effective in the treatment of mania (Ballenger & Post, 1980), and in preventing relapse (Okuma *et al*, 1981; Placidi *et al*, 1986; Watkins *et al*, 1987; Lusznat *et al*, 1987). Carbamazepine seems to be particularly effective in bipolar patients who fail to respond to lithium (Ballenger & Post, 1980; Folks *et al*, 1982), suggesting biological heterogeneity. However, its mode of action is undetermined.

### *A common mechanism?*

Can these seemingly independent findings relating to dopamine, acetylcholine and GABA be reconciled into a unifying hypothesis? It is generally accepted that within the nigrostriatal system there is interaction between dopaminergic, cholinergic, and GABA-ergic pathways (Marsden, 1982). A similar interacting set of neurotransmitter pathways in the mesolimbic system, which also contains dopaminergic, cholinergic, and GABA-ergic elements, would account for many of the pharmacological responses described above (Silverstone, 1985).

### *5-Hydroxytryptamine (5-HT) (serotonin)*

Bearing in mind the seasonal variation in the incidence of bipolar illness, and the pattern of winter depression and summer mania experienced by patients with SAD, it is of interest that seasonal variations have been described in 5-HT-related activity in platelets (Wirz-Justice & Richter, 1979; Swade & Coppen, 1980) and in post-mortem samples of hypothalamus (Carlsson *et al*, 1980). Also, *d*-fenfluramine, which acts by enhancing 5-HT neurotransmission (Garattini *et al*, 1986), was better than placebo in improving mood in depressed SAD patients (O'Rourke *et al*, 1987). Therefore variation in mood might reflect seasonal fluctuations in central brain 5-HT activity.

## Neuroendocrine activity

The secretion of the pituitary and pineal hormones are largely controlled by hypothalamic neurons, the activities of which are influenced by a number of neuropeptides.

### *Thyroid*

Long-term treatment with antidepressants in bipolar patients may lead to rapid cycling, particularly in middle-aged women with depressed thyroid function (Extein *et al*, 1982; O'Shanick & Ellinwood, 1982). Rapid cycling also occurs more frequently in those patients on lithium prophylaxis whose thyroid function is suppressed (Cho *et al*, 1979). This may reflect a thyroid-related alteration in periodicity of a biological clock, or a hypothyroid-induced change in neurotransmitter receptor sensitivity. Energetic thyroid replacement therapy in patients who are clinically hypothyroid can precipitate a manic episode (Josephson & Mackenzie, 1979) and over 18 such cases have been reported (Josephson & McKenzie, 1980). Similarly, rapid normalisation of hyperthyroidism can cause affective disturbance. While thyrotoxicosis in patients predisposed to bipolar illness can cause a manic relapse (Corn & Checkley, 1983), it does not ordinarily do so (Checkley, 1978).

Interestingly, in view of the seasonal variation in the incidence of mania, plasma levels of T3 and T4 in normal Dutch males were lowest in July, the time of year when the incidence of manic admissions is highest (Smals *et al*, 1977).

### *Sex hormones*

For women with a predisposition to bipolar disorder, the time of greatest risk of developing a manic episode is during the first two weeks after childbirth (Dean & Kendell, 1981), with over 20% of such women becoming manic then (Reich & Winokur, 1970). A past history of post-partum mania greatly increases the likelihood of it recurring, although such patients are more likely to remain symptom-free when not pregnant for longer periods than patients whose illness has not been restricted to the puerperium (Kadrmas *et al*, 1979; Katona, 1982). Thus there may be a subgroup of women predisposed to bipolar disorder who tend to become ill more frequently in the puerperium.

One possible explanation for post-partum mania is the rapid and dramatic fall in circulating oestrogen levels after delivery. Oestrogens reduce neuronal responses to dopamine (Cookson, 1981), and chronic oestradiol treatment leads to an increase in dopamine receptors in the corpus striatum of experimental animals (Di Paola *et al*, 1981). Thus, the post-partum fall in oestrogen levels could expose supersensitive dopamine receptors in the mesolimbic system, leading to central dopaminergic overactivity (Cookson, 1982). Mania can also accompany weaning (Joyce *et al*, 1981), but it is not clear whether this is related to the concomitant fall in prolactin (Abou-Saleh, 1982; Cookson, 1985).

### *Melatonin*

The secretion of melatonin from the pineal gland is closely linked to exposure to light and is normally released only at night. Bright light suppresses its release, with bipolar patients being said to be particularly sensitive to this effect (Lewy *et al*, 1981). Treatment with bright light appears to be effective in reducing the depressive phase of SAD (Rosenthal *et al*, 1985; Isaacs & Thompson, 1988); this is not dependent on sleep deprivation and, contrary to previous reports, it is not necessary to administer phototherapy in the early morning – the evening does just as well (James *et al*, 1985), as does midday (Isaacs & Thompson, 1988). The mechanism of action of phototherapy is therefore unlikely to be related to a phase shift, or to an extension of the photoperiod. It is uncertain to what degree melatonin is involved (Rosenthal *et al*, 1986). The therapeutic action of light could be mediated through the hypothalamic–pituitary–thyroid axis (Dietzel *et al*, 1986) with central 5-HT pathways being involved (Mason, 1989).

### Antidepressant drugs

All the drugs currently available for the treatment of depressive illness act to increase central catecholamine and/or indolamine neurotransmission (at least in the short term). Thus it is not surprising that treatment with antidepressant drugs may affect the clinical course of bipolar disorder.

Ten per cent of depressed patients treated with an antidepressant became manic shortly after starting treatment (Bunney, 1978), and bipolar patients are more sensitive than unipolar patients, with up to 60% becoming manic (Prien *et al*, 1973; Quitkin *et al*, 1981; Pickar *et al*, 1984). Although Angst (1985) could find no evidence that the introduction of antidepressant drugs in the 1950s increased the incidence of manic admissions in Zurich, overall it appears that some bipolar patients, especially middle-aged women, are susceptible to the mania-inducing potential of antidepressant drugs (Wehr & Goodwin, 1979; Kukopulos & Reginaldi, 1980; Wehr & Goodwin, 1987). This sensitivity may appear for the first time on withdrawal from these drugs (Mirin *et al*, 1981; Jones *et al*, 1984; Dilsaver *et al*, 1987).

## Psychosocial factors

### Life events

Kraepelin (1921) minimised the influence of psychological and social factors in the pathogenesis of bipolar disorder. By contrast, Rennie (1942), on reviewing the notes of 208 cases of bipolar illness admitted to the Johns Hopkins Hospital from 1913 to 1916, found "disturbing life situations" to have preceded the illness in four-fifths. In a Norwegian follow-up study, which included 42 patients with bipolar disorder admitted between 1938 and 1950, a distinction was drawn between the first illness, which did appear to be related to psychosocial factors, and subsequent recurrences, which did not (Astrup *et al*, 1959). In a larger, Swedish bipolar series, onset of the illness was preceded by a psychological trigger in one-fifth of cases (Perris, 1966). In another Norwegian study, of both bipolar and unipolar depression, an external event preceded the episode in half (Bratfos & Haug, 1968). All these studies were retrospective and uncontrolled.

In the first controlled examination of the impact of life events on bipolar disorder, Morrison *et al* (1968) interviewed 40 consecutive patients admitted with affective disorder (34 depressed, six manic) and 40 non-psychiatric admissions matched for sex, age and race. Although a quarter of the affectively disordered patients had experienced "identifiable stresses" within six months preceding the illness, this was also true for the control subjects. In a binational case-note study of manic patients, seven out of 25 Danish patients admitted between 1969 and 1973, and 11 of 38 London patients admitted between 1965 and 1974, had experienced "an independent event in the winter before the onset of mania", twice the incidence of a comparison population (Leff *et al*, 1976). In a group of 38 patients attending a lithium clinic in New York, there was little difference, apart from employment problems, in the frequency, severity, or type of life events between the 17 who relapsed and those who remained well over ten months (Hall *et al*, 1977). Extending her observations to 168 patients followed up prospectively for at least six months, Hall (1984) confirmed the earlier finding that patients who relapsed showed no increase in the total frequency of life events compared with those who did not relapse. Nor, among the relapsers, was there a greater number of life events before a relapse than at other times. However, loss-related events, employment problems and financial difficulties did occur more frequently before manic episodes. In another study conducted in the same centre, half the 79 bipolar I patients recalled significant life events preceding their initial affective episodes, which had in many cases occurred several years before (Dunner *et al*, 1979). In a Polish sample, later episodes of bipolar illness were less often preceded by stress factors than earlier episodes (Bidzinska, 1984). However, a Canadian study found no difference between first and subsequent admissions (Kennedy *et al*, 1983).

A retrospective follow-up of 67 patients admitted to one English hospital during a two-year period with an episode of bipolar illness revealed that admission had followed a stressful life event in the previous four weeks in 15 (28%), compared with four (6%) out of 60 surgical admissions (Ambelas, 1979). Among the bipolar patients, half of those reporting adverse life events were first admissions. Of 50 first admissions in 1974–81, two-thirds had experienced a significant life event in the four weeks before admission, compared with a fifth of readmissions for mania, and under a tenth of surgical admissions (Ambelas, 1987). The commonest event was the death of a close relative, consistent with a number of case reports of funeral mania (Rickaby, 1977; Hollender & Goldin, 1978; Rosenman & Taylor, 1986). Role loss and 'work overload' have also been implicated as pathogenic life events (Dunner *et al*, 1979; Glassner *et al*, 1979; Bidzinska, 1984). Life events may be less likely to precipitate illness in those with an early onset (i.e. before 20) (Glassner & Haldipur, 1983).

The quality of life events is important. Whereas little difference may be seen in the overall frequency of life events before illness episodes in bipolar patients when compared with control subjects, those life events that predate bipolar illness are more likely to be unpleasant or threatening (Kennedy *et al*, 1983; Hall, 1984; Chung *et al*, 1986; Horesh *et al*, 1987).

While prophylactic lithium may buffer patients against the impact of adverse life events, a number of reports have appeared describing bipolar patients whose plasma levels were well within the accepted prophylactic range, and yet who had a recurrence in the aftermath of life-event stress. These have included women with marital problems (Benson, 1976), patients whose stress resulted from employment difficulties or family strife (Lieberman & Strauss, 1984), and patients whose homes lay in the path of a hurricane (Aronson & Shukla, 1987). In the latter study, relapsers had been less stable clinically before relapse, and were more exposed to chronic stresses in the absence of a close, confiding relationship. Thus not all patients are equally vulnerable to untoward life events. Certainly, relapse cannot always be attributed to poor compliance with lithium (Kennedy *et al*, 1983; Joyce, 1985).

### Family relationships and parental loss

Family disharmony may be aetiologically relevant in bipolar disorder. Both intrafamilial expressed emotion and affective style have been shown, although only moderately, to predict outcome (Miklowitz *et al*, 1988). One study has shown bipolar patients to have fewer confiding relationships than surgical controls (Kennedy *et al*, 1983). Loss of a parent before the age of 14 has been considered to be of aetiological relevance in the onset of unipolar depression in later life (Brown & Harris, 1978), but not bipolar depression (Forrest *et al*, 1965). Although one study found a high rate of early parental loss in bipolar patients (Carlson *et al*, 1974), another found no difference between patients and controls (Kennedy *et al*, 1983). Nor was parental loss associated with an earlier onset of illness (Roy, 1980). Joyce (1984) examined the influence of parental bonding in the pathogenesis of bipolar illness among 66 bipolar admissions to one New Zealand hospital. He concluded that it was unlikely to be of 'aetiological relevance', but might increase the vulnerability of relapse in female patients.

### Personality attributes

Bipolar patients showed increased 'emotional reliance' when compared with control subjects (Hirschfeld *et al*, 1986). Unfortunately, the information given provides no indication of whether those showing this trait were more or less likely to relapse, nor whether this trait was present before the illness. Taking advantage of the personality assessments carried out on 6315 conscripts to the Swiss Army in 1971, using the Freiburg Personality Inventory, Angst & Clayton (1986) noted that the scores of those who had developed bipolar disorder by 1983 did not differ from those who had not.

Among bipolar patients receiving regular lithium, there is some evidence that patients with a more anxiety-prone personality, as judged by a higher neuroticism score on the Eysenk Personality Interview, do less well (Maj *et al*, 1984; Abou-Saleh & Coppen, 1986). Furthermore, patients who readily accept medication and who recognise the early symptoms of relapse, are less likely to be readmitted during the 12 months following an episode of illness (Joyce, 1985).

### Summary

Thus environmental stresses appear to play a significant role in determining the onset of bipolar episodes, and to a lesser degree in successive relapses. Prophylactic lithium does not wholly protect against this vulnerability. Early parental loss and disturbed parental bonding appear to be of little importance.

## Drugs to prevent relapse

### Lithium

*Efficacy*

The overwhelming evidence from a number of well conducted clinical trials indicates that lithium reduces the risk of relapse in bipolar illness (Baastrup *et al*, 1970; Coppen *et al*, 1971; Prien *et al*, 1984; Bunney & Gurland-Bunney, 1987), and a NIMH/NIH Consensus Conference (1985) strongly recommended its use in the prophylaxis of bipolar disorder.

Before accepting this recommendation unreservedly, we need to take account of two Scottish epidemiological surveys. Focusing on a single catchment area in the south-west of Scotland, with a population of 145 000, McCreadie and colleagues pointed out that only a bare majority of those taking lithium at any given time appeared to be reaping any worthwhile benefit from it, and that most who start on lithium fail to continue (McCreadie & Morrison, 1985; McCreadie *et al*, 1985; Morrison & McCreadie, 1985). However, no distinction was drawn between bipolar patients, who formed less than half of those on lithium, and the rest. Most of the patients believed they had benefited from lithium. In the second Scottish study, admission rates in Edinburgh over the period 1970–81 failed to reflect any impact of lithium prophylaxis (Dickson & Kendell, 1986). One factor which may account for this lack of reduction in admissions is the greater likelihood of mania occurring in patients who have stopped taking lithium than in those who never started (Mander, 1986; Tyrer, 1987).

Cessation or major dose reduction of lithium prophylaxis may be followed by a manic episode. Whether this is a rebound effect or the re-emergence of the natural periodicity of the underlying illness is not clear (Waters *et al*, 1982).

On balance, it appears that lithium has a definite potential to reduce the rate of recurrence in bipolar illness. Whether or not such potential is achieved in an individual patient depends to a considerable degree on compliance (Mander, 1986).

*Compliance*

It is estimated that at least 20–30% of bipolar patients discontinue taking lithium, against medical advice (Jamison *et al*, 1979). There appear to be two main reasons for this. One is the very success of lithium in reducing the upswings in mood, which patients miss (Van Putten, 1975; Folstein *et al*, 1982); the other is side-effects, which occur in the majority of patients on lithium (Vestergaard *et al*, 1980). Men give different reasons for stopping lithium from women (Bech *et al*, 1976). Women stop because of polyuria or weight gain. Men are troubled more by tremor and impaired memory. One way of reducing side-effects is to reduce the dose. Contrary to what was originally believed, adequate prophylaxis can be achieved with plasma levels of lithium as low as 0.4–0.6 mmol/l (Coppen *et al*, 1976). Compliance is higher in patients with stable marriages, where the partner assumes a supportive and at times supervisory role. It may be increased by cognitive therapy (Jamison & Akiskal, 1983), as well as by a treatment programme involving a key family member (Glick *et al*, unpublished). Conversely, patients with poor social support do less well (O'Connell *et al*, 1985).

*Prediction of response to prophylactic lithium*

Even with good compliance, some 20–50% of patients fail to respond to lithium prophylaxis (Dunner *et al*, 1976; Carrol, 1979; Kukopulos *et al*, 1980; Maj *et al*, 1984). The only reliable predictor of outcome to lithium prophylaxis in a given patient is that patient's past experience with lithium. If previously well on lithium, the chances are that he/she will continue to remain well; conversely, if a relapse has occurred despite consistent compliance and adequate lithium plasma levels, there is a strong possibility that the illness will recur during continued lithium prophylaxis (Carrol, 1979; Kocsis & Stokes, 1979). Patients with four or more recurrences a year, so-called 'rapid cyclers', do not do well on lithium (Dunner *et al*, 1976; Misra & Burns, 1977; Abou-Saleh & Coppen, 1986; Goodnick *et al*, 1987). A positive family history for bipolar disorder appeared to influence response in some series (Prien *et al*, 1973; Maj *et al*, 1984; Abou-Saleh & Coppen, 1986) but not in others (Dunner *et al*, 1976).

Age of onset, the age at starting lithium, and gender do not affect the long-term outcome (Kocsis & Stokes, 1979; Abou-Saleh & Coppen, 1986; Mander, 1986; Goodnick *et al*, 1987). Nor, according to some reports, do social circumstances (Kocsis & Stokes, 1979; Maj *et al*, 1984). Personality variables may play some part, with anxious patients doing less well (Maj *et al*, 1984; Abou-Saleh & Coppen, 1986), perhaps because they are more vulnerable to adverse life events. Many of these views are based on retrospective chart reviews in selected patients, which has obvious methodological weaknesses.

In one of the few prospective studies, Maj *et al* (1984) examined the effect of prophylactic lithium in 100 patients with a history of two affective episodes in the preceding year. Fifty-one had bipolar disorder. Three-quarters of the lithium responders and two-thirds of the non-responders could be correctly identified by combining four factors: a positive family history; a high red-blood-cell:plasma-lithium ratio; a low neuroticism score; absence of HLA-A3 antigen. In another study it appeared that patients who started each episode of illness with manic symptoms that gave way to depression, did better than those who started with depression and went on to mania (Haag *et al*, 1986). It may be that these two contrasting patterns of presentation represent different subgroups of bipolar disorder, which respond differently to drugs.

### *Endocrine effects*

The most frequent endocrinological consequence of long-term treatment with lithium is hypothyroidism. A raised plasma level of thyroid-stimulating hormone occurs in 15–25% of patients, being more frequent in women (Transbol *et al*, 1978; Lazarus *et al*, 1981). Thyroid autoantibodies may also be found. In a consecutive series of 39 bipolar patients starting on lithium with normal initial antibody titres, two (both female) developed raised titres while on lithium (Lazarus *et al*, 1986). As reduced thyroid function may predispose to an increased frequency of recurrence, thyroid replacement therapy should be considered in patients with lithium-induced subclinical hypothyroidism. At the very least, thyroid function tests should be done every six months to detect any significant deterioration. Thyroid function returns to normal when lithium is stopped (Goodnick *et al*, 1987).

## Carbamazepine

This tricyclic compound was introduced as an anticonvulsant, and subsequently was found to be effective in trigeminal neuralgia. Japanese workers showed it to be effective in mania (Okuma *et al*, 1981), and it was subsequently shown to be an effective prophylactic for bipolar disorder (Ballenger & Post, 1980; Okuma *et al*, 1981).

Three double-blind prospective clinical trials comparing carbamazepine to lithium have been carried out. One found carbamazepine and lithium to be equally effective in a mixed group of bipolar, unipolar and schizoaffective patients (Placidi *et al*, 1986). Another study, which included 20 bipolar patients, found both drugs increased mean symptom-free intervals, as compared with the pre-treatment experience, but lithium more so than carbamazepine, with the patients and an independent rater reporting equal improvement on both drugs (Watkins *et al*, 1987). In the third trial, involving 40 bipolar patients, carbamazepine proved more effective than lithium (Lusznat *et al*, 1987). The combination of lithium and carbamazepine is sometimes better than either drug alone (Nolen, 1983; Post *et al*, 1987).

## Depot antipsychotics

Despite the widespread use of antipsychotics in the acute treatment of mania, relatively few publications describe the use of depot antipsychotic medication in the prophylaxis of bipolar illness. In one small group of patients on lithium, the addition of depot fluphenazine or flupenthixol reduced the frequency of manic episodes (Naylor & Scott, 1980). Flupenthixol when given alone was found to reduce manic episodes, but had little or no effect on depressive relapses (Ahlfors *et al*, 1981). Addition of flupenthixol to lithium conferred no advantage; if anything, it made matters worse, causing more depressive symptoms than placebo (Esparon *et al*, 1986). By contrast, the addition of depot haloperidol to ongoing lithium prophylaxis improved eight out of 12 unstable bipolar patients (Lowe & Batchelor, 1986).

Before any firm conclusions can be drawn regarding the relative efficacy of antipsychotic drugs in the prophylaxis of bipolar disorder, controlled, double-blind, long-term comparative trials are needed in well defined populations meeting strict diagnostic criteria.

## Summary

Currently, lithium remains the first choice for the prophylaxis of bipolar disorder, but compliance needs to be encouraged, side-effects minimised, and thyroid function supervised. For those who cannot tolerate lithium or who fail to respond, carbamazepine may prove to be an effective alternative. Finally, depot antipsychotic drugs are worth trying in those cases of recurrent mania resistant to lithium or carbamazepine, given separately or in combination.

## Conclusions

To summarise, bipolar disorder is a genetically heterogeneous, but phenotypically uniform condition that runs an episodic course. A variety of meteorological, neurochemical, neuroendocrine, pharmacological and psychological events can influence the pattern of illness and the frequency of relapse in those who are genetically at risk. Is there a final common pathway through which all these factors might come together? The short answer is that we do not know. However, some intriguing hypotheses have been advanced.

Post *et al* (1984) point out that in bipolar disorder the frequency of relapse increases with the number of previous episodes, with later episodes having more sudden onsets and being less reactive to life events. They liken this pattern to the phenomenon of 'kindling' in experimental animals, whereby the eventual development of a major motor seizure can result from intermittent electrical stimulation of the brain with a current originally insufficient to produce overt behavioural effects. Kindling is generated more easily within the limbic system than in the cortex, and reflects a long-lasting, possibly permanent, change in neuronal excitability, which gives rise to spontaneous and stress-related seizures. This would at least partly explain the efficacy of anticonvulsant drugs such as carbamazepine in reducing the frequency of relapse in bipolar disorder, and would also explain the lessened importance of psychosocial precipitants over time.

The same authors also invoke the concepts of behavioural sensitisation and conditioning to explain the clinical course of the illness (Post *et al*, 1984). In behavioural sensitisation, repeated applications of a low dose of a psychomotor stimulant, such as amphetamine, leads to greater behavioural effects with an ever-decreasing latency. A similar change in response pattern can be seen following repetition of certain stresses. Thus the underlying neurochemical propensity to relapse may be reinforced by the psychological and physiological symptoms of the illness.

An alternative view, which is not mutually exclusive, is that sleep reduction forms the final common pathway in the pathogenesis of mania (Wehr *et al*, 1987). Many factors implicated as causes of manic episodes, such as psychosocial stresses, post-partum changes and administration of various drugs and hormones, may interfere with sleep. In support of this hypothesis, when bipolar patients are deprived of sleep for a night, they may become manic (Wehr *et al*, 1982). It is also in keeping with the observation that flying overnight from west to east is more likely to cause mania than going in the opposite direction (Jauhar & Weller, 1982).

The genetic and clinical variability within the diagnostic category of bipolar disorder strongly suggests several causal mechanisms, with different factors varying in greater importance for different patients. No single explanation will suffice for all.

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**Lecture**

# The Involvement of Soviet Psychiatry in the Persecution of Dissenters

ANATOLY KORYAGIN

The persecution of dissidents by misuse of psychiatry is a pernicious practice, which has its birth in the very nature of the Soviet system. The downfall of the Stalinist regime and the partial condemnation of it in 1956 resulted in the emergence of a dissent movement in the Soviet Union. There was an enormous escalation in the number of complaints concerning the negative aspects of life in the country. Authors appeared who demanded the publication of material on forbidden themes, and very shortly after that, *Samizdat* (self-published material) began to emerge. The KGB, unable to resort any longer to the methods of Stalinist terror, had to find new ways of bringing pressure to bear on dissent. The problem was to find new methods of repression, which in their form would not bear a Stalinist stamp, but would, nevertheless, be just as effective as the old ones. Branding dissidents as being mentally ill, and putting them into psychiatric hospitals proved to be the optimum solution for this problem. Firstly, this served as a mask for the repressive act *per se*, using a psychiatrist who could appear as an apparently disinterested party, on the sidelines. Secondly, it made it possible to isolate the dissident for an indefinite period of time, in a situation where any kind of violence could be wreaked against him, and where he would have absolutely no defence – legal or otherwise. The subject became entirely dependent upon the will of the psychiatrist, whose actions in turn were determined and regulated by the KGB. Thirdly, the practice gave rise to statistics reflecting a rise in the number of psychiatric patients in the Soviet Union, but not a rise in the number of dissidents.

A new wave of repression came into effect under Krushchev. Among the first victims of this form of psychiatric repression were the writer Valery Tarsis, and Pyotr Grigorenko. The sanity of these people, could not be questioned, as it had allowed them to be leading personalities in their generations. Who can estimate the real numbers of protesters who were flung into psychiatric hospitals for defending only their ideas of human dignity and what was right? These people were said to be suffering from conditions that were latent, or akin to, psychoses, akin to neuroses, or some form of schizophrenia. A psychiatrist armed with the theories of Professor Snezhnevsky regarded any kind of protest action as a sign of the inability of the involved person to adapt to society, or to function normally within it. Brezhnev's KGB unfolded a new and wide-ranging wave of repression over the whole country. Dissidents were put into prison and sentenced to psychiatric treatment, quite frequently without investigation or trial – even without a psychiatric examination of any kind.

At the beginning of the 1960s, working as a young psychiatrist in Siberia, I personally experienced the kind of pressure that is exerted on doctors by the KGB, by the procuracy, and by officers of the Ministry of the Interior. Lawyers and officers of the Ministry tried to impress on me many times the nature of the psychiatric illness from which this or that person was supposedly suffering – and I was a psychiatrist! They assured me that to give a psychiatric examination to such a person was a tedious formality from their point of view. In each case, in order not to become a compliant party to the official organisations, I had to refuse categorically to make individual judgements, and to demand that these 'psychiatrically ill' people be examined by a medical panel or by a panel of forensic specialists. Usually, I would say, "If his relatives had brought him to me, or if he had come alone, I would diagnose the case and I would undertake its treatment, but when he is brought to me by you, be so good as to put him up for examination by a medical panel; I will make no individual diagnosis". Doctors who did not act in that way, and who did give diagnoses at the behest of the punitive organisations, became accessories to the repressive actions of those organisations. Many yielded to this pressure – from the KGB, the procuracy, the Ministry of the Interior – and people were placed in psychiatric hospitals without a proper forensic psychiatric examination.

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Based on a lecture given at the Royal College of Psychiatrists' Autumn Quarterly Meeting on 29 October 1987.

A leading role in this type of activity was played by the Serbsky Institute for Forensic Psychiatry. It quickly became notorious for the number of psychiatric sentences handed out to people who had entered into conflict with the authorities, and for the hackneyed nature of the diagnoses (more frequently than not, paranoia syndrome). The Institute did not accept that there could be individual medical errors in this particular sphere. Of 17 people I examined and found to be sane, all had been classed as suffering from paranoia syndrome. This 'syndrome' was established when they were already confined to psychiatric hospitals, so that diagnosis appeared to have been specifically tailored to suit any dissident in the Soviet Union. The proponents of this new form of repression made the Serbsky Institute the leading force in supplying the 'psycho-prisons' (in Russian, a slang term), which is how these hospitals came to be known. They identified 'socially unadaptable behaviour', and staff were mobilised towards gathering information on people exhibiting it, and putting them into psychiatric hospitals. Such punitive psychiatrists as Snezhnevsky, Lunts, Morozov, Landau, and Taltse indeed acquired a dreaded notoriety for their activities. Torture in psychiatric hospitals was carried out with the aid of the entire medical arsenal: neuroleptic drugs such as sulphazine, electroshocks, and insulin, sometimes in connection with other means, were used as a form of moral and physical tyranny.

Psychiatric repression in the Soviet Union has always been carried out under the direct control of the KGB; the officers of this organisation would institute proceedings against dissidents. They were there when forensic panels carried out examinations, and, indeed, exerted pressure on the members of these panels; they dictated their own will in the courts, and controlled and watched those whom they had placed in the hospitals, during the hospital stay. Discharge could only be accomplished with the permission of the KGB. In this way many dissidents were broken, and reduced to a state where they rejected their beliefs.

However, the activity of the KGB in the sphere of psychiatry did not pass unnoticed, either by human-rights campaigners within the Soviet Union, or by the international community. There emerged a movement protesting about the prisoners of the psychiatric hospitals. In defending their very convenient *modus operandi*, the KGB threw all its forces into combating those who exposed this misuse. Psychiatrist Semyon Gluzman was sent to a psychiatric prison for publishing the case of General Pyotr Grigorenko. Later, Alexander Podrabinek, who wrote a work about the misuse of psychiatry, also found himself imprisoned. All the members of the unofficial Committee for Studying the Abuse of Psychiatry for Political Purposes eventually found themselves behind bars. I was the last of these, for publishing an article called *Involuntary Patients*. In this article I tried to show, from a professional point of view, the mechanism of political psychiatric repression in the country.

Denunciation of this vile practice of psychiatry for political purposes led to the condemnation of the Soviet Psychiatric Society at the meeting in Honolulu of the World Psychiatric Association (WPA) in 1977. Nevertheless, this form of repression continued unabated in the Soviet Union. On the pretext of preserving *détente*, the Soviet authorities demanded that worldwide criticism of this pernicious practice should cease. Fearing expulsion from the WPA, which was a strong possibility at the Congress of 1983, Soviet psychiatrists shamefully chose to withdraw before they could be expelled.

Recently, a number of articles have been published in the Soviet media about misuse of psychiatry in the country. But what are the misuses they mention? They document what they call "criminal psychiatrists" who have misused their professional position by accepting bribes from genuine criminals in order to help them escape imprisonment. They mention that the police have, by misuse of their powers, placed sane people in psychiatric hospitals and that psychiatrists confirm false diagnoses. They even describe the role of psychiatry in persecuting those people who are unacceptable from the authorities' point of view. Such admissions are of course exceedingly valuable, but the aim of these publications is to reduce the question of misuse of psychiatry in the Soviet Union to isolated instances. To mention only individual cases where psychiatrists have misused their professional position or where the police have done likewise would suggest there has never been any appearance in the West of former victims of Soviet misuse of psychiatry – people like the writer Valery Tarsis, General Pyotr Grigorenko, Leonid Plushch, Yury Belov, Natalia Gorbanevskaya, Viktor Davydov, Argentov, and now very recently, Vladimir Titov. Such writing gives the impression that there have not been more than 100 victims of misuse of psychiatry in Soviet hospitals. Also, Soviet propaganda always cites individual cases of psychiatric patients; patients who may have had psychiatric symptoms, but who at the same time made what could be termed as anti-government or anti-Soviet statements – and there are really very few such people. In fact, the vast majority of those who are persecuted by Soviet psychiatry for political purposes are sane people; sane people who have gone through Soviet psychiatric prisons; and their overall number would run to hundreds.

What, one may ask, of the likes of Vartanian, who we may call an official persecutor, an official proponent of the misuse of psychiatry – or Margarita Taltse, who to this day does not blush to call someone like Alexei Nikitin, a founder of the Free Trade Unions in Moscow, psychiatrically ill. It is regrettable that there are Western psychiatrists who nevertheless are speaking about the feasibility of readmitting the Soviet Union to the WPA. Would the President of the WPA really feel honoured by the thanks and the recognition passed onto him by Morozov through the press? Who can say that they do not know that psychiatric repression in the Soviet Union continues? Information from the psychiatric hospitals, and from the concentration camps, at times travels very slowly. We now know for sure that a number of dissidents were put into psychiatric hospitals in 1986; these occurrences are concrete cases. I have a list of the names of these dissidents and the articles under which they were formally charged: anti-Soviet agitation and propaganda; attempts to cross the border; anti-Soviet slander; and religious activity. I recently received information about the Kutavins (husband and wife), who were put in hospital straight from the reception office of the praesidium of the Supreme Soviet. One Mironova, a couple of days after she complained about the forced placement in hospital of her son, was sent his mutilated corpse. This information is reported in *Psychiatric News* (16 October 1987), the newspaper of the American Psychiatric Association. At this moment, many Hare Krishna devotees are subjected to hideous treatment in Soviet psychiatric hospitals, and are being forced to recant their faith publicly. However, there is no logic in showing a person diagnosed as schizophrenic publicly recanting his or her religious convictions – how can that person, so diagnosed, be fully responsible for his words? Yet the KGB is quite prepared to continue this practice because propaganda at home is much more important to them than Western condemnation.

Readmission of Soviet psychiatrists to the WPA without firm guarantees would offer the KGB and other punitive organisations a *carte blanche* to operate, and afterwards the situation of political prisoners in Soviet psychiatric hospitals would really become virtually hopeless. Once the Soviets are readmitted into the WPA what good will protests do? And the responsibility for such a step will fall upon the shoulders of those who are prepared to readmit the Soviet Union to the WPA. As a doctor and human-rights campaigner, I should like to put forward my own ideas of the conditions under which the Soviet admission to the WPA would be acceptable. Firstly, Soviet psychiatrists must admit that repression and misuse of psychiatry has occurred in the Soviet Union for political purposes, and reject such practices. All those who are in psychiatric hospitals for political reasons must be released; Soviet psychiatrists should be obliged to take part in the work of the Special Committee on Studying Abuse of Psychiatry for Political Purposes, a committee that is a subsidiary of the WPA; and the Soviet authorities must clearly make it possible for this committee for function freely on the territory of the USSR.

There is a problem which is of considerable importance to doctors. One frequently hears the question "Is it right for a doctor to concern himself with questions of human rights?". The leadership of the WPA says that to condemn the actions of punitive psychiatry in the Soviet Union is to politicise our activities. But why do they not label as political the actual misuses that are perpetrated? Is misuse not political but criticism is? The question about the apolitical nature of medicine is probably as old as medicine itself; how long has the question of whether a doctor should offer medical help to his enemy on a field of battle been debated? A doctor is a human being like everyone else, and may have his own political views, but it is a different consideration when you think a doctor should be apolitical towards his patients; he should treat them irrespective of their convictions and views. The main concern of the doctor has always been to offer the patient help, to offer compassion, to offer love. Anything that is harmful to life and health should thereby be seen as a negative manifestation by any doctor – a manifestation that he should combat with all his force. If politics brings direct harm to the health of people, and indeed robs them of their life, can a doctor sit back and look at this calmly, especially when medicine itself is being used to inflict harm? It could well be that the doctors in Nazi Germany, at a time that was so perilous to all mankind, found moral excuses for their neutral attitude towards Fascism by citing their professional objectivity. It is hard for us to condemn those who were neutral then; that is a matter for a doctor's own conscience. But had their attitude been different, such people as Joseph Mengele, the notorious medical experimenter at Auschwitz, might not have appeared in their ranks. I would like to state quite categorically that there are doctors like Mengele in the Soviet Gulag today. They may not kill as many people, they may use somewhat different methods, but they do exist, and it ought to be our concern that there should not be such doctors now, or in the future. For this reason, no doctor can remain indifferent to the use of medicine as a form of political repression. It is another matter to take part in political life himself, but he must not use his medical knowledge to further political aims; in this sense, medicine is apolitical.

### Discussion

*(Questions put to Dr Koryagin)*

Q. What type of experiments are the 'modern-day Mengeles' doing in the Soviet Union?

A. They subject those who are on hunger-strike to physical forms of torture, and in this way determine which are the most effective ways of forcing someone who is on a protest hunger-strike to break that strike. For example, protest hunger-strikers are force-fed, and the administration of this force-feeding is distributed in such a way that the person being subjected to it is all the time on the borderline between life and death. He cannot live or function normally, and yet he is not allowed to die. This is really a terrible physical condition to be in. I experienced it myself, for over 15 months. You are force-fed just the right amount for you to be constantly experiencing acute hunger pains. If you are just conducting a hunger-strike, without force-feeding, you can easily go three days without experiencing any pangs of hunger. The organism adapts, but nevertheless, those first three days are very difficult for the metabolism. The force-feeding is conducted so as to maintain you in that initial condition, which stresses the organism very badly. At the same time they introduce neuroleptic drugs – very strong active drugs which affect the cardiovascular system – into your body. You have the feeling that your heart is physically going to burst out of your rib cage. When I was lying down, my body weight then being 50 kg, my heart beat reached the rate of 120 per min, and every third beat would miss. When I was not being force-fed, I did not feel like that. And frequently after force-feeding there is a terrible sensation of falling into a chasm, because straight after feeding you are administered a neuroleptic drug. It is a terrible deep sleep, almost a stupor.

Another method they use is to smear a probe with salicylic acid when introducing it into the stomach. Can you imagine what happens when that comes in to contact with the internal body membranes? The irritation is quite dramatic. At the same time, you are handcuffed and there is a prop holding your mouth open; you cannot move, and because of the irritation by the probe, the tear ducts are stimulated and tears run down your face. And the person introducing the probe stands beside you and mutters into your ear, "It's your own fault, we're only doing this because you're forcing us to do it. You, it is you who are forcing us to be cruel". In other words, it is our fault that their hand does not falter in carrying out these practices. My impression is that as there are bound to be protest hunger-strikes in the future, what they are doing is amassing information – specific data on how the hunger-striker feels, and how he behaves. They keep scrupulous records and then these are studied, relevant conclusions are drawn, and further actions based on these data. These are only some of the types of experimentation.

Q. What is the value of *glasnost* in view of the fact that Mr Gorbachev used to be head of the KGB in the USSR?

A. I must correct you, Gorbachev was never the head of the KGB in the Soviet Union – Andropov was. Do you want to know what is the outlook for reduction in the misuse of psychiatry in the epoch of *glasnost*?

I have no particularly bright hopes. The release of some people from psychiatric hospitals now is not yet evidence that the regime is becoming liberal. If you look carefully, you will see that these releases are very carefully timed, one person at a time, the aim being to extend this process of release for as long a time span as possible, so that those who monitor the process will have the impression that the situation in the Soviet Union is improving – literally from day to day. So you have someone released today, that is fine, someone released next week, even better, a week later, better still, so, whether you like it or not, there is a general impression in the minds of those who watch these things that there is progressive development. You must bear in mind that those who are released from psychiatric hospitals are not exonerated or rehabilitated, in either a social or a diagnostic sense. They leave the hospitals branded as psychiatrically ill; they can be put back the very next day. If the government were really liberal in its aims, there would be nothing to stop them from releasing everyone like that immediately, and saying "Yes, an error was committed, we admit this. It will not be repeated again". What is happening is just what you could call a carefully calculated release of hostages, and every release gains an enormous amount in propaganda value. Recall how dissidents have been released from prison or exile; there was myself, there was Sakharov and Begun, and all this was done bit by bit, not at once. And every time a known dissident was released, the Western reaction quite obviously was, "Look, things are improving, they've released such and such". If the Soviet authorities really wanted to improve things, they would release all these prisoners and publicly apologise. That really would be an improvement – but we have not seen it yet.

Q. How were you able to keep up your morale while you were in prison?

A. The greatest support I found in prison was the knowledge that I was right. I could not bend the knee to this obtuse, evil force, which wanted to break me, for no other reason than that it is against what is right and morally acceptable. I reasoned: each one of us will die, and as this is inevitable, then it is better to die with your human dignity intact, to die as yourself with the strength of your convictions and belief in your ideals, and better sooner than later – better than losing that in yourself that is human, and rejecting your views and sinking to the level of becoming a cowardly, shuddering being, and not a man.

Q. Is it possible that some of your colleagues genuinely believe that social dissent is a genuine illness?

A. I do not believe that a genuine psychiatrist in any country of this world could consider dissent to be a symptom of psychiatric illness. After all, you as a psychiatrist must know that for any kind of diagnosis like that there must be a genuine reason – not just social or political considerations, but physical and psychiatric factors. Only a complete ignoramus could build a diagnosis on the sole reason that somebody holds this or that political view. If there were such cretins in Soviet psychiatry, it is quite possible that some of them did believe this, yes. But there is a percentage like that in any population.

Q. Dr Koryagin, we fully support your views on psychiatry and your stand on human rights, but there are obviously hundreds of thousands of political prisoners all over the world who are ill-treated or tortured with the help of doctors. Would you like to extend your activities to the involvement of political prisoners who are tortured by doctors in other countries?

A. Yes of course. Any doctor must stand against anything that brings misery and that harms the health of any people anywhere, at all. You are a specialised audience; you are my colleagues – psychiatrists – and that is why I have 'narrowed in' on this particular aspect. We must remember that not only is psychiatry misused for political ends, but ordinary medicine also. When I talked about Mengeles, I was referring not only to psychiatrists. Doctors are present, we know, at tortures that occur in Latin America, and this must be condemned, and we doctors must certainly do our best to stop this. Soviet doctors who, when dealing with protest hunger-strikers in camps and the prisons, administer the treatment I mentioned, are not psychiatrists, but ordinary doctors of medicine. We must oppose *any* misuse of our profession, any direction of it against the interests of humanity, wherever that should occur. As a former human-rights campaigner in the Soviet Union, that is the area I know best and this is why I have concentrated on it, because I can give a personal testimony. But I whole-heartedly support all those who campaign for the cessation of torture in any country, wherever it may be. In Geneva I spoke to the head of the United Nations committee against torture – and not only psychiatry was discussed. We agreed that more radical steps should be taken to counter the use of torture throughout the world generally, including that towards prisoners. Do you know that the UN definition of torture carries a footnote that says that none of the definitions of torture applies to treatment given to people who are serving terms of imprisonment in accordance with the laws of their country – so this gives free rein to anyone. Thus, any misuse of treatment directed towards a prisoner does not rate as torture, and that is documented in an official document of the United Nations. I was recently in America, and I spoke extensively to doctors and medical organisations about this particular question of torture as applied to prisoners we arrived at a number of conclusions and mapped out some possible activities towards the end you mentioned. But as you are psychiatrists here, I concentrated on the misuse of psychiatry.

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# Treatment of Severe Psychiatric Illness in a Day Hospital

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Severity of psychiatric illness was assessed using standardised clinical and social measures in 69 in-patients and 41 day patients admitted consecutively from the community. Day and in-patients differed little in terms of psychiatric symptoms and social disability, especially if compulsory admissions were excluded. Protection of self or others was a common reason for in-patient admission given by clinicians, who were otherwise prepared to treat seriously ill patients in the day hospital. Very few of the day patients had to be transferred to the in-patient facility, and at three months and one year the two groups showed similar improvements. It is concluded that day treatment is feasible for some seriously ill psychiatric patients, but a random-allocation study is required to assess more completely the efficacy of day treatment, and define the characteristics of those who require in-patient admission.

An increasing proportion of psychiatric patients is now being treated in day hospitals, but it is not clear from the existing literature which groups of patients are better off as a result of this change (Creed *et al*, 1989). Vaughan (1983) noted that this reorientation towards day care has taken place without a firm foundation of empirical research, and even challenged the claims that day hospitals provide a cheaper alternative to in-patient care. Wilkinson (1984) criticised the methodology of those studies that claim to have demonstrated the superiority of day treatment, and also requested more satisfactory studies of day care for patients with severe psychiatric disorder. There is recent evidence that day hospitals are being used as a refuge for chronic patients in the absence of adequate day centres (Pryce, 1982; McGrath & Tantum, 1987), even though the recommendations of the Department of Health and Social Security (DHSS, 1975) regarded day hospitals as treatment centres for acute psychiatric conditions.

Several authors have noted that in-patients are more severely ill than day patients (Gath *et al*, 1973; Bowman *et al*, 1983), even though random-allocation studies have assumed that a large proportion of patients can be treated in either setting. Two such random-allocation studies had to exclude approximately 80% of admissions, many of these on the grounds that the patients were too ill to be considered for day care (Herz *et al*, 1971; Fenton *et al*, 1979). This was confirmed by Platt *et al* (1980), who attempted to allocate patients randomly to day or in-patient treatment. Their study had to be abandoned because the responsible clinicians regarded two-thirds of the patients as so ill that treatment was regarded as "mandatory", and a further 20% were regarded as suitable only for day treatment.

Like these clinicians, some researchers have accepted that severe psychiatric illness cannot be treated in the day hospital, and attempted to assess the efficacy of day treatment only for those patients with neurotic and personality disorders (Tyrer & Remington, 1979; Dick *et al*, 1985). Others studied day treatment as an adjunct to brief admission to an in-patient unit (Washburn *et al*, 1976; Hirsch *et al*, 1979), but there have been a few reports indicating that even initial treatment of psychotic patients in the community or day hospital is feasible (Wilder *et al*, 1966; Stein & Test 1980, Hoult, 1986). Thus it is not clear what proportion of 'severely' ill psychiatric patients can be managed solely in a day hospital.

The aim of the present study was to compare the nature and severity of the illnesses being treated in the day hospital and in-patient unit of a new district psychiatric service, which was commenced with the explicit aim of treating severe psychiatric illness in the day hospital. This policy arose partly because the in-patient unit has too few beds and is situated several miles outside the catchment area. The district service covers a population of 140 000, in one of the most socially deprived inner-city areas in Britain. The same consultants had patients in both in-patient and day-hospital units, which each take immediate admissions from the community.

It was hypothesised that patients admitted to the in-patient unit would show similar social impairment, but more severe psychiatric symptoms than the day patients. It was also predicted that at follow-up, day patients would show a superior level of social functioning than the in-patients.

## Method

A consecutive series of day and in-patients under the age of 65 years were studied concurrently. The only patients excluded from the study were those who were admitted solely for detoxification from drugs or alcohol, and those who discharged themselves before the initial assessment could be completed. For each patient the mental state was recorded using the Present State Examination (PSE) within five days of admission. This yields data on 29 syndrome scores as well as providing a diagnosis according to the CATEGO system (Wing *et al*, 1972).

A relative or other household member (or hostel warden) was interviewed to assess the patient's behaviour before admission. For this purpose the Social Behaviour Assessment Schedule (SBAS) (Platt *et al*, 1981) was administered; this provides scores on 13 scales of social performance, 24 scales of behaviour and seven scales measuring burden on relatives. Demographic data, clinical diagnosis and details of previous psychiatric treatment were recorded from the patient's notes. The PSE and SBAS were both repeated after three months, and the SBAS was repeated at one year for all those patients who could be traced.

The study initially involved patients under the care of two consultants, but those under the care of two further consultants were included later, in order to include adequate numbers of patients admitted directly to the day hospital. Thus for most of the study, the majority of patients admitted from the district were included; they are thought to be typical for all admissions in the district. The study was not intended to alter routine clinical practice in any way, and transfers between day and in-patient units continued as usual. Adequate numbers of in-patients had been included after six months, but the slower admission rate to the day hospital (of patients direct from the community) meant that this branch of the study continued for nine months.

Since patients compulsorily admitted under sections of the Mental Health Act cannot be treated initially in the day hospital, the results for these patients are presented separately.

### Statistics

Statistical differences between day and in-patients were assessed using $t$-tests and $\chi^2$ tests as appropriate for demographic and referral factors, PSE syndrome scores and SBAS scores. To assess significance of change after treatment, paired $t$-tests were used for summary SBAS scores and an analysis of covariance was used to allow for any differences of the initial scores.

## Results

Data were collected on 69 in-patients and 41 day patients. All of these had a PSE, but an SBAS was completed for only 36 day patients and 60 in-patients. In five instances there was no informant, in six the informant was unobtainable or refused; two patients refused consent for the informant to be interviewed, and in one case the informant was also a patient. During the time of data collection, eight in-patients and four day patients were admitted but did not stay long enough for the initial assessment.

### Demographic and referral factors

The day patients were significantly younger than the in-patients (38 v. 45 years, $t=2.89$, d.f. 108, $P=0.005$), more were single (20 of 41 v. 19 of 69, $\chi^2=4.9$, $P<0.05$) and they had a younger age of onset of their first psychiatric illness (25 v. 34 years, $t=3.94$, d.f. $=102$, $P<0.001$). There were no significant differences in sex distribution, ethnic group, social class, proportion employed at time of admission or previous time spent as an in-patient. Of the day patients 40% had a current episode of illness that had lasted a year or more, compared with 20% of the in-patients.

TABLE I
*Sources of referral*

| | *No. of* | |
|---|---|---|
| | *day patients* | *in-patients* |
| General practitioner, domiciliary visit or social worker | 24 | 37 |
| Psychiatric out-patient department | 11 | 9 |
| General hospital | 4 | 7 |
| Accident and emergency department | 2 | 12 |
| Prison | 0 | 4 |
| Total | 41 | 69 |

Overall comparison between groups: $\chi^2=8.34$; d.f. $=4$; $P=0.079$.

TABLE II
*Main reasons for clinician's choice of day or in-patient care*

| | *Main reason for admission*[1] | | *Total no. of times reason given* | |
|---|---|---|---|---|
| | *day patients* | *in-patients* | *day patients* | *in-patients* |
| Observation/ assessment | 22 | 15 | 24 | 22 |
| Relief for carer or from environmental stress | 2 | 4 | 5 | 8 |
| Special form of treatment | 12 | 17 | 26 | 33 |
| Protection of self/ others | 4 | 28 | 6 | 33 |
| Patient's insistence | 1 | 1 | 2 | 1 |
| Not known | — | 4 | — | — |
| No carer | — | — | — | 4 |

1. Comparison of columns 1 and 2, $\chi^2=16.25$; d.f. $=5$; $P<0.01$.

TABLE III

*Number of patients admitted to each treatment facility who reported suicidal ideas or acts on the PSE*

| | *Day patients* (n=41) | *In-patients* (n=69) |
|---|---|---|
| Suicidal ideas | 20 | 30 |
| Suicidal acts: | | |
| life endangered | 0 | 2 |
| life not endangered | 10 | 10 |

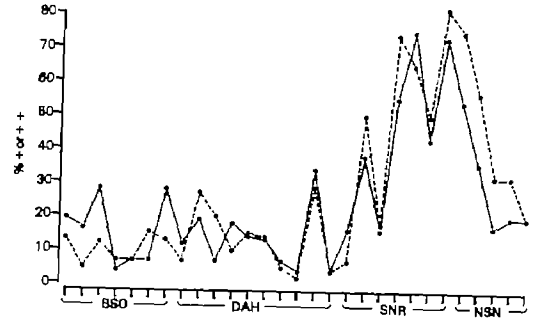

FIG. 1 Present State Examination syndrome scores on admission for in-patients (● — ●) ($n=69$) and day patients (○ — ○) ($n=41$), expressed as percentage of each group who scored + or ++ on each syndrome. BSO = behaviour, speech and other syndromes; DAH = delusions and hallucinations; SNR = specific neurotic reactions; and NSN = non-specific neurotic syndromes. Headings correspond to Figs 1 and 2 in Knights *et al* (1980).

There was a similar pattern of living situations with 37% (15 of 41) of day patients and 25% (17 of 69) of in-patients living alone or in hostels; the remainder lived with family members. In terms of living situation and the availability of an informant for the SBAS interview, there was no difference in the amount of social support available to day and in-patients.

Each of the consultants admitted patients directly to the two treatment units in similar proportions. There was a tendency for fewer of the day patients to be admitted directly from the accident and emergency department, but this difference did not reach statistical significance (Table I).

The responsible consultant did not find it easy to state a single primary reason for admission to one unit instead of the other. The results are therefore presented firstly as the main reason (where a single main reason was given) and secondly as the total number of times each reason was quoted (Table II). These differed significantly: more day patients than in-patients were admitted primarily for observation, assessment and special investigations, and more in-patients were admitted primarily for the protection of self or others (14 of the 69 in-patients were admitted compulsorily under the Mental Health Act). Ten patients were admitted to each unit following parasuicide (Table III), and similar proportions in each group had suicidal ideas at the time of admission (as assessed by the PSE).

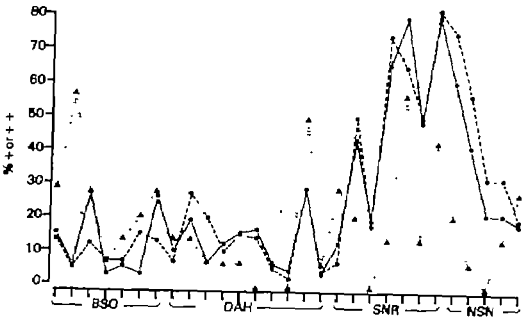

FIG. 2 Present State Examination syndrome scores as for Fig. 1, but results for in-patients admitted compulsorily (▲ ····· ▲) ($n=14$) displayed separately from remaining in-patients ($n=55$). First two items of BSO = agitation and overactivity.

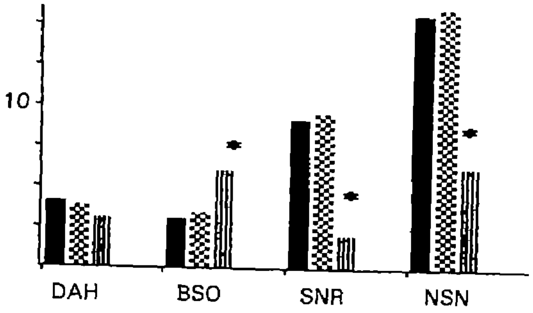

FIG. 3 Mean Present State Examination summary scores. In-patients admitted compulsorily ( ▥ ) ($n=14$) shown separately from remaining in-patients ( ▩ ) ($n=55$) and day patients (■) ($n=41$). *$P<0.01$.

TABLE IV

*Mean total and subscore PSE scores and SBAS scores for in-patients and day patients of present study and those of London study (Knights* et al, *1980) for comparison*

| | *London study* | *Manchester study* | |
|---|---|---|---|
| | *(all patients* n=77) | *in-patients* (n=69) | *day patients* (n=41) |
| Total PSE score | 24.43 | 30.64 | 32.10 |
| DAH | 2.68 | 3.66 | 4.09 |
| BSO | 3.23 | 3.91 | 3.02 |
| SNR | 4.97 | 8.00 | 9.22 |
| NSN | 13.65 | 15.07 | 15.70 |
| SBAS scores (Manchester scores adjusted for comparison) | | | |
| mean behaviour score | 8.7 | 14.50 | 12.03 |
| social performance score | 11.9 | 14.41 | 13.99 |

TABLE V
*PSE syndromes by diagnosis*

| | *Schizophrenic* | | *Manic–depressive* | | *Neurotic* | | *Organic + personality disorder* | |
|---|---|---|---|---|---|---|---|---|
| | *day patients (n = 19)* | *in-patients (n = 17)* | *day patients (n = 4)* | *in-patients (n = 23)* | *day patients (n = 17)* | *in-patients (n = 16)* | *day patients (n = 1)* | *in-patients (n = 13)* |
| DAH | 6.79 | 9.94 | 1.00 | 1.13 | n.a. | n.a. | 0.00 | 2.15 |
| BSO | 4.05* | 7.03 | 2.00 | 2.87 | 2.37 | 2.13 | 1.00 | 3.38 |
| SNR | 7.95* | 4.76 | 11.00 | 9.47 | 10.87 | 10.60 | 6.00 | 6.00 |
| NSN | 13.79 | 12.79 | 16.75 | 16.95 | 18.44 | 16.80 | 12.00 | 12.00 |

*$P<0.05$.

### PSE results

The PSE results are demonstrated as syndrome scores in Fig. 1. In-patients showed more agitation, overactivity, motor slowness and self-neglect, but in other respects the profiles were similar. Since the day hospital could not accept direct compulsory admissions, these were separated from the voluntary admissions and the results are demonstrated in Fig. 2. These 14 compulsorily admitted patients were significantly more overactive ($P<0.0001$) and showed significantly more non-specific psychosis ($P<0.05$) than the remaining (voluntary) in-patients. It can be seen that the profiles were similar for in-patients admitted voluntarily and the day patients, although the former showed a non-significant trend to greater motor slowness and self-neglect. These data represent the proportion of patients scoring + or + + on each syndrome score. When only those with severe forms of each syndrome (+ + only) were plotted, the results were similar.

The numerous syndrome scores can be reduced to four subscores, which are presented in Fig. 3. Those patients admitted compulsorily scored significantly higher on the behaviour, speech and other syndromes.

Table IV shows the results of the PSE summary scores of the present study together with those of a London study which used the same measures (Knights *et al*, 1980). It can be seen that the day patients of the present study have slightly more PSE symptoms than the in-patients of the London study, confirming the severity of the illnesses treated in the day hospital of the present study.

### Diagnostic subgroups

The results so far have been presented irrespective of diagnosis. Since individual diagnostic groups yielded small numbers, the patients were divided into four broad diagnostic categories (Table V). It can be seen that most of the patients in the manic–depressive psychosis and organic/personality disorder groups were treated as in-patients, but the schizophrenic and neurotic subgroups were evenly divided between the two treatment settings.

The day patients with a diagnosis of neurotic disorder (mostly neurotic depression) were significantly younger than the in-patients in the same diagnostic category, they had a younger age of onset of illness and had received less previous treatment. The day and in-patients with schizophrenia showed no difference with respect to age and age at first illness, but the day patients had experienced more previous treatment, and significantly more had a present episode of a year or more.

The only significant differences on PSE summary score were within the schizophrenic group: in-patients had a significantly higher score on behaviour, speech and other syndromes (the main differences were on overactivity, non-specific psychotic features and self-neglect), whereas the day patients scored higher on depressive and anxiety items (Table V). These differences remained even when the compulsorily admitted patients were excluded.

### Social measures

There are three areas of assessment involved in the interview with the informant: the patient's abnormal behaviour, his role performance and the burden on the relative. The summary scores on these scales, given in Table VI, show no significant differences between day and in-patients at admission. These summary scores indicate that the behaviour of the patients in the present study was somewhat more disturbed than that of the in-patients in the London study (Table IV).

TABLE VI
*Summary SBAS scores for day and in-patients at admission and those interviewed at three months and one year*

| | *Admission* | *Three months* | *Twelve months* |
|---|---|---|---|
| Social role performance | | | |
| day patients | 19.9 | 11.9 | 11.5 |
| in-patients | 23.7 | 15.6 | 11.8 |
| Patients' reported behaviour | | | |
| day patients | 12.4 | 7.1 | 9.5 |
| in-patients | 14.2 | 8.4 | 8.5 |
| Burden on relatives | | | |
| day patients | 5.7 | 4.3 | 3.2* |
| in-patients | 6.8 | 3.8 | 5.0* |

*Difference between day and in-patients at one year $P<0.05$ by Mann-Whitney *U*-test.

(a) Patient's behaviour. This is recorded on 24 different scales (Hirsch *et al*, 1979). Significant differences were found on only three of these: in-patients were reported as having more disturbed sleep and being more overactive than the day patients, who were reported as being more worried.

(b) Role performance. Although the trend for in-patients to be more impaired than day patients is clear, it fails to reach significance ($P = 0.08$). Of the 13 individual items, only those concerning 'decision making' and 'affection/friendliness' were significantly different, in-patients being more impaired.

(c) Burden on relatives. Immediately before admission, in-patients placed slightly more burden on their relatives and there was one significant difference among the subscale scores; impaired leisure time was greater among the in-patients, but the differences on the remaining six scales were not significant.

The patients admitted compulsorily showed greater overactivity, odd ideas, and worry than the remaining in-patients, but these differences just failed to reach significance. Among the diagnostic subgroups there are few differences, but in-patient neurotics were more impaired in their role performance, more disturbed in their behaviour, and imposed more of a burden than the day patients with a neurotic diagnosis.

**Results of treatment**

Of those with a PSE completed at admission, 84% were interviewed again at three months; the figure for SBAS was similar (82%). At three months, ten patients withdrew their consent for further interviews of an informant, four informants were unobtainable, one patient died and another moved from the area. Duration of stay was longer for the day patients; this will be explored fully in another publication.

Results are shown in Fig. 4 for admission and at follow-up only for those patients who were interviewed at three months. However, the 16 patients not interviewed again were similar to the whole cohort on PSE and SBAS profile at admission. Table VI and Fig. 4 demonstrate that there were significant improvements in most areas of clinical and social functioning. There was no difference between the effect of treatment in the day hospital and in-patient unit when the results were compared using analysis of covariance (total PSE, $F = 0.52$, d.f. 1,60, $P = 0.47$; SBAS, behaviour $F = 0.015$, d.f. 1,63, $P = 0.9$, role performance $F = 0.48$, d.f. 1,64, $P = 0.49$, burden $F = 0.86$, d.f. 1,57, $P = 0.36$).

During the course of the study, four day patients were transferred to the in-patient unit and 11 in-patients were transferred to the day hospital. In order to compare more accurately the effects of treatment in the two settings, these patients were excluded from the next analysis, which showed that there was no significant difference in the amount of change between the patients who received only day and only in-patient treatment. The day patients were regarded as causing significantly less burden at one year; this isolated finding could have occurred by chance, but details of the burden scores will be published in a separate paper.

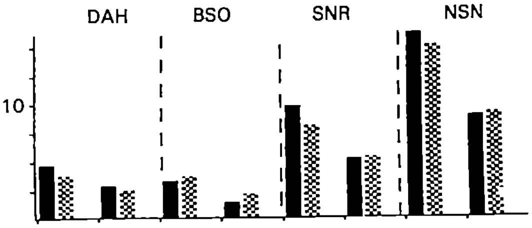

FIG. 4 Mean Present State Examination summary scores on admission for all in-patients ( ▨ ) ($n = 69$) and day patients ( ■ ) ($n = 41$) shown at admission (left-hand columns) and after three months (right-hand columns).

## Discussion

We had expected, like others (Hogarty *et al*, 1968; Bowman *et al*, 1983), that those patients admitted to the in-patient unit would have more severe psychiatric symptoms than those in the day hospital. Although this was true, it was far less dramatic than predicted, only two of the PSE syndromes (motor slowness and self-neglect) being significantly different. Like Smukler *et al* (1981), we found that the patients admitted compulsorily showed more disturbed behaviour, but once these patients were excluded, our data suggested that there was little difference in the severity of illness treated in the day hospital and the in-patient unit. However, two methodological problems could have prevented us from detecting a true difference between the groups of patients.

Firstly, the instruments might not have been sensitive enough to detect subtle differences between day and in-patients. This is unlikely, however, because the instruments were sensitive enough to detect clear differences between patients admitted compulsorily and the voluntary in-patients. In addition, they were sensitive enough to detect the clinical and social improvement that occurred with treatment.

Secondly, subtle diagnostic differences might underlie the true difference between the groups of patients. It was clear that those with manic-depressive psychosis and organic/personality disorders were primarily treated as in-patients, although their PSE and SBAS profiles were not dissimilar to those of the whole cohort. The schizophrenics in the day hospital included a greater proportion with chronic psychotic symptoms, both in terms of previous treatment and present episode, whereas the in-patient schizophrenics had more behavioural and speech abnormalities. However, the data concerning response to treatment suggested that these psychotic symptoms changed considerably in both groups. Although the PSE syndromes were similar in day and in-patients with a neurotic diagnosis, the demographic and SBAS data suggested that the in-patients were older and more disturbed.

The clearest differences between day and in-patients detected in this study were the clinicians' use of in-patient facilities for the patients requiring protection for themselves or others. These patients constituted the majority of those presenting to the accident and emergency department, and would have been admitted by junior medical staff. Whether such patients can be rapidly transferred to day care is the subject of a different study.

The instruments used in the present study were those employed by Hirsch *et al* (1979) to demonstrate that brief admission to hospital for acute psychiatric illness was as efficacious as standard treatment. Those workers had originally intended to perform a random-allocation study, but found the clinicians (especially junior doctors) were too conservative in their use of the in-patient unit and day hospital for sufficient numbers of patients to be allocated (Platt *et al*, 1980). The clinicians in the Platt study felt that psychosis and suicidal ideas were usually reasons for in-patient treatment, but in the present study this was not so. Whereas only 18% of the day patients in the Platt study were psychotic, the figure in the present study was nearly 50%. Similarly, Dick *et al* (1985) felt it necessary to exclude from the day hospital patients who were psychotic, suicidal, disturbed in their behaviour or who had social problems. But the clinicians of the present study were forced to treat seriously ill patients in the day hospital through lack of beds, and we have found, like others (Wilder *et al*, 1966; Stein & Test, 1980; Hoult, 1986), that such patients can be satisfactorily treated without admission to an in-patient unit.

The fact that such treatment is feasible does not necessarily mean it is desirable. Certainly the care of seriously disturbed patients in the day hospital is worrying for the clinician, with so many patients having suicidal ideas, but in addition the implications for carers in the community need to be spelled out. The burden of care 'out of hours' for these psychotic and behaviourally disturbed patients falls to relatives, and general practitioners have to be consulted more frequently (Dick *et al*, 1985). Some community-care programmes have a 24-hour community nursing service (Hoult, 1986), but this district does not have such a service; yet only four of the most disturbed day patients needed to be transferred to the in-patient unit. Many patients and their relatives expressed concern at the prospect of day treatment (over half of the patients had previously been treated for a similar episode of illness as in-patients), but we collected no evidence that burden to relatives was increased during the whole time that the patients were in the day hospital.

It has been claimed that day treatment has important potential advantages for the patient (Wilder *et al*, 1966; Michaux *et al*, 1973), but the present study cannot really address this issue because, like Hogarty *et al* (1968), we found that there were demographic and diagnostic differences between the patient populations. We did not find that day patients showed the predicted superior social functioning at one year; the only significant difference on the SBAS was at 12 months, when the day patients caused less burden to their relatives. This might simply reflect the fact that these patients were less of a burden before the onset of illness (Creed & Anthony, 1989). Alternatively, it might indicate the efficacy of day treatment, and particularly the increased support of relatives that occurs when a patient is treated in the community rather than becoming an in-patient (Hoult, 1986).

This study was performed in a small, inner-city area, where no patient lived more than three miles from the day hospital, so the results may not be applicable to other districts. However, the results have indicated that a proportion of severely ill patients can be treated in the day hospital, although the exact characteristics of those patients requiring in-patient care have yet to be defined. This is the aim of the random-allocation study currently in progress.

## Acknowledgement

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# Lapse, Relapse and Survival among Opiate Addicts after Treatment
## A Prospective Follow-up Study

MICHAEL GOSSOP, LYNETTE GREEN, GRANIA PHILLIPS and BRENDAN BRADLEY

This paper presents data from the first British prospective study to investigate relapse among opiate addicts after treatment. Eighty subjects were followed up over the six-month period immediately after discharge from treatment and were interviewed on several occasions. Large numbers of subjects used opiates within a very short time after discharge; 71% used them within the first six weeks. However, this first lapse to opiate use did not herald a full-blown relapse to dependent use. There was a gradual increase in the number of abstinent subjects, with 45% abstinent and living in the community at the six-month point. The practical and theoretical implications may be regarded as broadly encouraging.

There can be few more central questions about the treatment of drug-dependent patients than what happens to them after they leave a treatment programme. It is unfortunate, therefore, that this apparently simple question has received so little research attention.

Relapse is a serious problem in the addictive disorders. Indeed, it has become almost a truism to assert this. Nonetheless, relapse remains a poorly researched area. Much of the available research literature concerns alcoholism, but even here, the details of relapse and survival are poorly researched (Litman, 1986). This is particularly true of survival (i.e. continued abstinence after treatment). In the field of drug dependence, the lack of empirical information about these issues presents serious obstacles to our understanding of outcome among addicts.

The classic follow-up studies of Stimson and his colleagues (Thorley *et al*, 1977; Stimson *et al*, 1978) provided much information about the 'natural history' of a group of heroin addicts who first approached London drug-dependence clinics in the late 1960s. Stimson's project, however, was not designed to investigate addicts who had been withdrawn from opiates, nor to look at the event of relapse. The few such published studies were conducted in the United States, and there are problems in generalising to a British (or other non-American) context. There are known differences in the availability and purity of drugs in the two countries (Gossop, 1987), as well as other, more general, sociocultural differences in patterns of drug abuse. More importantly, perhaps, some of the American studies have used somewhat unusual definitions of relapse. Chaney *et al*, (1982), for instance, looked at relapse among a group of 38 addicts on a methadone maintenance programme. This study defined relapse not as a return to drug-taking but as the use of drugs additional to the prescribed methadone. As Chaney *et al* comment themselves, comparing such relapses in this special sense with relapses from an abstinent state may create conceptual problems.

The present study reports upon the only prospective British study of relapse among opiate addicts after treatment. In a previous report (Gossop *et al*, 1987), data were presented on a smaller sample of 50 subjects, and it was suggested that despite a high rate of initial lapses after leaving treatment, many addicts subsequently became abstinent from opiates. Indeed, about half of the earlier sample of opiate addicts were abstinent at six months, and this result is one of the most positive findings of its kind to have emerged from a systematic investigation. This paper presents a final report of this study based upon a complete analysis of the full sample of 80 subjects. The study looks in greater detail at what happens to opiate addicts after in-patient withdrawal and treatment, at the timing of lapses to opiate use, and at the circumstances surrounding such lapses, and also presents data about changes in drug-taking behaviour during the six months after discharge from treatment. The primary focus of this study is upon the relapse to, or continued abstinence from, drug use, and in particular opiate use, after treatment.

## Method

### Subjects

Eighty subjects took part in this study. All were opiate addicts who received in-patient detoxification and treatment at the Drug Unit of The Bethlem Royal Hospital and the Maudsley Hospital between November 1984 and April 1986.

The study's primary concern is relapse/abstinence after leaving treatment. For this reason a precondition of entry to the study was abstinence from opiates, and subjects who failed to complete the opiate withdrawal programme were not included within the study sample. The 80 subjects who qualified were drawn from 97 consecutive admissions to the unit, an 82% completion rate. This is directly comparable with the findings of an earlier study in the same treatment setting which reported that 81% of in-patients completed withdrawal (Gossop *et al*, 1986). All subjects were dependent upon opiates at the time of admission.

There were 60 males and 20 females in the sample. Ages ranged from 15 to 38, with a mean of 27 years. Subjects in the sample started using drugs at an average age of 16 years (range 11–30). Regular opiate use had started at an average age of 21 years (range 12–35). It is interesting that both the age at which subjects first used any drug, and the age at which they started regular use of opiates vary considerably; also that the upper end of the age ranges indicate that drug use could begin as late as 30 years and regular opiate use at 35 years. This is contrary to certain common preconceptions about illicit drug use and confirms the heterogeneity of the drug-misusing population.

For 47 subjects the main opiate used at the time of admission was heroin. Seven subjects used methadone, five used other opiates (Palfium (dextromoramide), Diconal (dipipanone), codeine linctus, or DF 118 (Dihydrocodeine)), and 21 subjects regularly used more than one opiate (usually heroin and methadone). The majority of subjects were multi-drug users and many used amphetamines, barbiturates and tranquillisers. At the time of admission, the most common route of using opiates was by intravenous injection ($n = 52$).

### Procedure

Treatment included a 21-day methadone withdrawal, followed by a programme of assessment and rehabilitation tailored to patients' specific needs. At the time of the study, the drug unit lacked resources to provide any systematic after-care for addicts leaving treatment, although all subjects were offered attendance at the out-patient clinic for support. There was considerable variation in the extent to which subjects sought treatment or support from helping agencies. In some cases no further approach was made to any such agency; some subjects engaged with statutory or non-statutory drug treatment services; in many cases, there was sporadic contact with a variety of services.

Data were collected by semistructured interviews. All interviews were administered by two trained interviewers, and replies were recorded on forms designed for the purpose.

Subjects were first interviewed within four days of their admission to the in-patient unit, before their detoxification had begun (In-patient Interview). The In-patient Interview covered demographic features such as age, sex, educational status and socio-economic background of the subject, a drug history, details of current drug use, and intentions about future drug use. The second interview (Relapse Interview I) took place approximately two weeks after discharge from the in-patient unit or, if it was known, as soon as possible after the subject had used an opiate. Sometimes this sort of information was gained as a result of the subject recontacting the clinic with a request for help after using opiates: on other occasions a friend or relative of the subject would contact the clinic. For the purposes of this study, relapse (or, more precisely, lapse) was defined as the use of any opiate or opioid drug. All subjects were asked in detail about all types of drug-taking behaviour since discharge, about their current life circumstances, where they lived, how they filled their day, who they were seeing, and other potential risks or protective factors in their current life. The third interview (Relapse Interview II) was identical to the second and was administered six weeks after discharge only to subjects who had *not lapsed* by the time of their second interview. There were 71 subjects contacted and interviewed at six weeks (this number being made up of those people who had not lapsed at two weeks and three who had not been previously contacted for interview). In all, data from relapse interviews are available for 74 subjects: six subjects could not be contacted or would not agree to be interviewed. The final interview (Follow-up Interview) took place approximately six months after discharge from the in-patient unit. It covered similar material to the relapse interviews.

The In-patient Interview was conducted in an interview room on the drug unit. Subsequent interviews took place at the out-patient clinic, at the subjects' homes, or wherever else subjects agreed to meet the interviewers. Urine specimens were taken at the time of the Relapse and Follow-up interviews and analysed for the presence of the major psychoactive drugs.

## Results

Of the 80 subjects in the study, 75 were interviewed six months after discharge. Two subjects (both male) died during the follow-up period, both as a result of drug overdoses. Definite outcome data are therefore available for 77 subjects (96%). Where percentages are calculated in the results section they relate to the 'contacted sample' ($n = 75$) or the 'known sample' ($n = 77$). Except where otherwise stated, percentages are calculated from the known sample.

Six months after discharge, 51% (39 subjects) were opiate-free. These comprised 19% (15 subjects) who had remained totally abstinent from opiates during the entire period since their discharge from in-patient treatment, and 31% (24 subjects) who had used opiates at some point since leaving the unit but were no longer using them at the six-month interview. Subjects using opiates on a daily basis at the six-month interview represented 32% of the known sample (25 subjects): this group was regarded as being re-addicted. A further 14% (11 subjects) were using opiates on an occasional basis (defined as less often than daily).

Urine specimens were taken at each interview wherever this was possible. Urine was screened by the routine combination of thin layer chromatographs (TLC), gas liquid chromatography (GLC), and enzyme immuno-assay technique (EMIT). TLC was used to detect opiates, opioids, barbiturates, benzodiazepines and

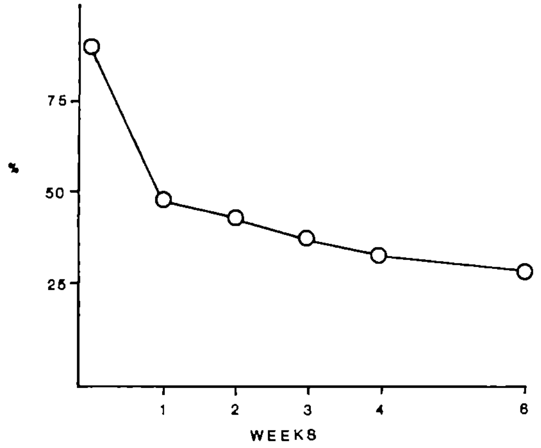

FIG. 1 Cumulative survival curve for the first six weeks after discharge.

cocaine. GLC was used for amphetamines and alcohol; and EMIT was used for cannabis. Urine specimens were obtained from 90% of the contacted sample at the two-week and six-week points, and there was 99% concordance between interview results and urine screening regarding opiate use. At the six-month point, 95% of the contacted subjects gave urine specimens, and the concordance between interview data and urine results was 99% for heroin (morphine metabolites), and 93% for methadone.

Of the subjects who were abstinent at six months, six were in prison and four were receiving some form of in-patient or residential treatment for drug dependence. If these subjects are excluded from the analysis, the proportion of abstinent subjects drops from 51% (39/77) of the known group, to 45% (29/65) of the reduced group who were living in everyday settings without external supports and prohibitions against drug use.

Sixty-two subjects (81%) used opiates at some point during the six-month period. Eight subjects who had completed withdrawal lapsed during the period of in-patient treatment, and this use of opiates led to their discharge. In most cases the first lapse took place very soon after discharge (Fig. 1). Of those who were abstinent at discharge, 11 used opiates on the day that they left the unit. A further 12 used them within the next two days. A total of 32 subjects (42% of the known sample) had lapsed within one week of leaving the unit. At six-week follow-up, a total of 55 subjects (including the two who died of opiate overdoses) had lapsed (71% of the known sample).

The majority of initial lapses occurred in the company of other users (63%); about one-third (35%) occurred while the subject was alone: only one subject first lapsed in the company of non-users. Places in which the initial lapses occurred were as follows: 48% in the home of another addict; 31% in the subject's own home; 17% in a public place; and 3% in the clinic itself. In almost all cases, the first lapse occurred during the afternoon (12:00–17:00) (46%) or evening (17:00–22:00) (47%); very few initial lapses occurred in the morning (between waking and 12:00) (3.5%) or at night (3.5%).

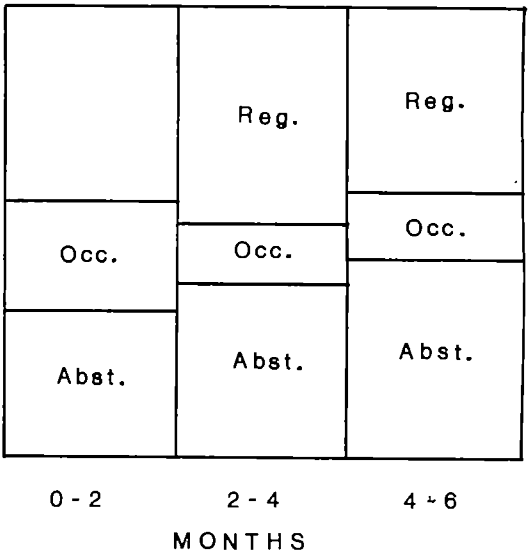

FIG. 2 Abstinence (Abst.), occasional use (Occ.) and regular use (Reg.) in the six months following discharge.

Of the 60 subjects in the contacted sample who lapsed, 24 subsequently recovered and were abstinent at the six-month point.

To indicate changing patterns of drug use over time, the total follow-up period was divided into three equal periods of approximately two months (depending upon the precise follow-up time for each subject), and each subject's use or non-use of drugs within these periods was examined and coded according to the predominant pattern (i.e. whether the person was mainly abstinent, using occasionally (less than once a day), or using once or more per day during those times).

During the first two-month period, 23 subjects (31% of the contacted sample) were predominantly drug-free; 19 subjects (25%) were occasional users, six using opiates less than once a week, and 13 using opiates more than once a week but less than daily; 33 subjects (44%) were daily users.

During the second two-month period, there were 30 non-users (40%) (an increase), 9 occasional users (12%) (a decrease), and 36 daily users (48%). During the final two-month period, the number of non-users was 33 (44%); the number of occasional users was 10 (13%) and the number of daily users was 32 (43%). The number of subjects using opiates on an occasional basis dropped after the first two months from 25% to 12%. These results are shown in Fig. 2. (Since these data refer to proportions of subjects in each of the drug use categories during each of the three periods, it must not be assumed that the same subjects are necessarily represented in the different categories across time.)

There was considerable variation in the dose levels of opiates used. Because of the difficulties of combining dose levels of different opiates (e.g. illicit heroin and pharmaceutical methadone), doses were divided into three broad categories: light dose was defined as less than '⅛ g' of illicit heroin per day, or less than 30 mg/day of methadone; medium dose as '⅛–½ g' of illicit heroin per day, or 30–60 mg/day of methadone; and heavy dose as more than '½ g' of illicit heroin per day, or more than 60 mg/day of methadone. These definitions, although open to discussion, were adopted with regard to previous research on levels of use among London addicts and in the light of published guidelines for clinical practice (Banks & Waller, 1983; Department of Health and Social Security, 1984; Johns & Gossop, 1985; Gossop *et al*, 1986).

On admission, only 5 of the 80 subjects used light doses, 34 used medium doses and 41 used heavy doses. During the last two months of the six-month follow-up period, of the 42 subjects who used opiates, 14 were using light doses, 18 were using medium doses and 10 were using heavy doses.

The route by which subjects took their opiates also changed over the period from admission to the six-month follow-up. At admission, 52 subjects (65% of the full sample) were injecting opiates. Six months after discharge 28 (37%) of the contacted group were injectors.

Among the 39 subjects who were opiate-free at six months, there were some using other drugs. Ten were using cannabis, both less often than daily; two were using amphetamines, both less often than daily; three were using tranquillisers. None of the opiate-abstinent subjects was using cocaine or barbiturates. Two of the opiate-abstinent subjects were using alcohol heavily at six months, and four reported heavy use of alcohol at some point during the follow-up period. Heavy use of alcohol was defined according to the criteria of Litman (1986).

## Discussion

Many previous reports have asserted that outcome is very poor among individuals with addictive disorders. Callahan (1980) commented that "traditionally, the treatment of heroin addiction has been singularly unsuccessful". Schur (1963) has stated that "even optimistic practitioners recognise that relapse to the further use of drugs is the rule rather than the exception" and that "the likelihood of accomplishing permanent cures is slim"; and Einstein (1966) that, regardless of the type and intensity of treatment, "the great majority of addicts simply resume drug use".

Overall, 51% of the sample were abstinent six months after discharge from treatment. Excluding those who were in residential treatment settings or in prison, and considering only those living in the community, 45% were abstinent six months after discharge from treatment. This 45–51% abstinence rate is one of the highest reported in a systematic research study for individuals with an addictive behaviour problem. This may be partly because some previous studies have used a 'natural history' type of study which yields results relating to the spontaneous recovery rate among addicted groups. The classic British study by Stimson & Oppenheimer (1982) is an example of this approach. In the present study, on the other hand, all subjects had been admitted to a treatment programme which offered a comparatively intensive package of withdrawal from drugs, assessment, treatment, and rehabilitation.

Although a higher rate of abstinence has been reported by Gordon (1983) in a ten-year follow-up study of 60 patients who attended a London clinic in 1970, there are certain methodological differences between that study and this. In Gordon's study, subjects were not contacted but data were collected through various official records, with drug use being presumed only if shown in the records. In the present study, data are based upon personal interviews backed up by urine screening. There are also differences between the subjects in our own and Gordon's study. In the present study, subjects were drawn from consecutive admissions dependent upon opiates. In Gordon's study, it is unclear how the 60 subjects were selected, and the subjects presented with a range of drug problems. It is interesting that those subjects who were using opiates had a significantly worse outcome than subjects with other drug problems. Quite apart from the different follow-up periods involved in the two studies (the present study having been designed to look at relapse), such differences in methodology may have affected the reported outcome rates.

The inclusion of urine testing procedures within the present study design allows us to place great confidence in the accuracy of the reported findings. When urine analysis results were compared with the interview data for opiate use on all of the follow-up occasions (two weeks, six weeks, and six months), rates of concordance ranged between 93% (for methadone at the six-month follow-up interview) and 99% (for heroin on all interview occasions).

During the earliest stages of the project, the initial impressions were of a very poor outcome. Of the subjects who did take opiates after treatment, the majority did so within a very short time after leaving the unit. Seventy-one per cent of the sample had lapsed within six weeks of leaving the unit, and 42% had lapsed within one week. This rapid return to opiate use is a conspicuous feature of the results. It is also relatively easy to observe without special follow-up procedures, and is often made known to the treatment staff, either by the patient or by others who are in touch with the patient. To the clinical staff, therefore, it often seems as though their efforts have been ineffective in helping patients to stay off drugs, an impression which almost certainly plays a large part in leading to the sense of disillusionment that affects many clinical workers who have worked for long periods in this area. The results of the present study, notably the 45–51% abstinence rate at six months, provide evidence to counter such pessimistic and erroneous impressions of treatment failure.

When the lapse data are looked at in greater detail, it is clear that most lapses occurred in the company of other users, and many in the home of another user. Lapses were equally likely during the afternoon or evening, and almost all lapses occurred at these times of day. These results suggest (not surprisingly) that the company of other users is a high-risk factor associated with the return to opiate use. They may also point to the problems that many treated addicts have with finding rewarding and supportive ways of filling their leisure time.

It is clear from our results that the first lapse to opiate use does not necessarily herald a full-blown relapse to an addictive pattern of use. There is a 'recovery-after-lapse' effect that can be hidden in traditional presentations of relapse data (such as that of Fig. 1), in which the event of lapse or relapse, once it has occurred, cannot be reversed. Our data show that the proportion of subjects not using opiates gradually increases throughout the six-month period, and a substantial proportion of those who used opiates soon after discharge were abstinent at six months. Also, of those who were using opiates at six months, 11 subjects (14%) were using opiates less often than daily and may be regarded as not physically dependent. Thus, despite the high initial lapse rate after discharge, 65% of the sample had not 'relapsed' to addiction six months after leaving the unit. If the six subjects in prison are excluded from this analysis on the grounds that their abstinence was enforced, this figure drops to 62% (44/71); and if the other four people who were in some form of residential treatment are also excluded, the figure drops to 60% (40/67). Nonetheless, even the lowest of these figures (60%) represents a 'good' outcome in comparison with previous estimated relapse rates for addicts. The results in this respect are encouraging.

It has been suggested that some individuals may achieve abstinence from opiates only at the cost of substituting other forms of dependent drug taking. Our results show that although the abstinent subjects often took drugs other than opiates, such substitution to dependent use was not common in our sample. At six months, only two out of the 39 abstinent subjects were using alcohol heavily. Another two reported using alcohol heavily at some point during the six months. In addition, about one-quarter of the opiate-abstinent subjects were using cannabis: none were daily users. Two reported occasional use of amphetamines and three were using tranquillisers. None of the abstinent subjects was using cocaine.

These results have a number of implications, both theoretical and practical. It is clear that the period immediately after leaving a residential treatment is of massively high risk: the great majority of lapses occurred within the first few weeks after discharge, the greatest proportion within a matter of days. After the first four weeks there were few additional lapses. Whereas 52 subjects used opiates in the first four weeks, only ten others lapsed during the remaining five months. It is tempting to think of the first few weeks after discharge as a *critical period* in the process of recovery. If the individual can survive this critical period in a drug-free state, his or her chances of avoiding a return to opiate use may be considerably enhanced.

There is, in any case, every reason to provide the best possible support for the patient during this immediate post-discharge phase. In view of the considerable costs of treating addicts, it is extremely important that the hard-won gains of in-patient care should not be lost through the absence of adequate support at the point of leaving treatment. It is unfortunate, therefore, that after-care services are one of the more notably lacking of current treatment and rehabilitation resources.

In terms of our understanding of drug addiction, the results point to a relatively satisfactory outcome among treated opiate addicts and contradict some of the previous pessimistic suggestions on this issue. They also confirm that one lapse does not necessarily lead to a complete relapse back to addictive use. Lapses have been found to be common in addictive behaviour, even among ultimately successful subjects.

The in-patient treatment programme through which the subjects passed aimed at complete abstinence from opiates (and other drugs), and no provision was made to teach addicts how to control their drug-taking. For this reason, the restraint shown by many subjects in avoiding the escalation into dependent drug use after their first lapse is notable. This may be regarded as a 'self-taught' control response. It is worth considering the possible benefits that might follow from including some component in the treatment package specifically aimed at strengthening such controlling response to any lapse.

The results also suggest that the use of opiates on an occasional (less often than daily) basis is not a stable pattern among addicts after treatment. The numbers of people who were using opiates in this manner dropped throughout the six-month period. This may indicate either that the occasional use of opiates is difficult to maintain for such people, or that such a pattern of drug-taking is no longer sufficiently satisfying for them to continue in this manner. Since the numbers of people who were abstinent gradually rose during this time, it seems as though for many subjects the movement is from occasional use towards abstinence, rather than from occasional use to daily use. Again, this is an encouraging finding, and one which runs contrary to some clinical impressions.

There are other aspects of our results which could be regarded as encouraging. For instance, even among those people who had returned to using opiates during the final two months of follow-up, levels of use were lower than at admission to treatment: the number of 'high dose' users had dropped from 41 to 10. There were also fewer subjects who were using opiates by intravenous or other forms of injection: the number of injectors had dropped from 52 people at admission to 28 at six months. Since the in-patient admission of these subjects coincided with the beginning of the British anti-AIDS campaign, the reduction in injecting shown in the results may be partly due to a greater awareness of the hazards of injecting. Other studies have suggested that addicts are capable of modifying their drug-taking behaviour to take account of such information (Strang *et al*, 1987). This result also suggests the value of further research into the possibilities of building 'harm reduction' packages into treatment programmes aimed at problem drug-takers.

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# Circumstances Surrounding the Initial Lapse to Opiate Use Following Detoxification

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Seventy-eight opiate abusers were followed up after successful in-patient detoxification in order to examine renewed opiate use. The greatest number of initial lapses occurred within a week of subjects leaving in-patient treatment. Eleven categories of lapse precipitant were identified: cognitive, mood, external, withdrawal, interpersonal, leaving a protected environment, drug availability, drug-related cues, craving, priming, and social pressure. Cognitions, negative moods and external events emerged as the most commonly mentioned factors; these often occurred together, either in clusters or in a sequence. Implications of these results for models of relapse and for treatment approaches are discussed.

Relapse to drug use is a key problem in the addictions, and most studies reveal a very high rate of return to drug use after treatment (Hunt *et al*, 1971). By learning how individuals return to drug use following successful detoxification, it may be possible to identify factors which could be addressed in treatment so as to minimise the relapse rate. This approach underlies Marlatt's Relapse Prevention treatment of addiction (Marlatt & Gordon, 1985).

Marlatt studied relapse in alcohol abusers, heroin addicts, other drug abusers, gamblers and overeaters (Marlatt, 1978; Cummings *et al*, 1980). Relapse situations were divided into eight major categories of risk. Social pressure was the most common risk factor, accounting for 36% of relapse episodes, while negative emotional states accounted for 19%. Other categories were interpersonal conflict (14%), positive emotional states not involving other people (10%), negative physical states (9%), urges and temptations (5%), positive emotional states involving other people (5%), and testing personal control (2%). Litman *et al* (1977, 1983) found that the situations surrounding relapse to alcohol could be grouped into three main factors: unpleasant mood states, external events and euphoria, and lessened cognitive vigilance. The first two factors helped to predict subsequent outcome.

The present study investigated the specific circumstances in which a sample of British former opiate addicts returned to opiate use after leaving treatment.

## Method

### Subjects

The 80 opiate addicts who participated in this study are described in detail by Gossop *et al* (1989). They consisted of 60 men and 20 women, ranging in age from 15 to 38 years (mean 27). Drug use began on average at 16 years (range 11–30) and regular opiate use started on average at 21 years (range 12–35). To be selected, subjects had to have reached a drug-free state. The mean withdrawal dose was 43 mg methadone (range 20–90, s.d. 16).

### Procedure

The information reported here was collected by two trained interviewers, mainly at the first or second interview following discharge, at approximately two or six weeks after discharge, respectively. Only those subjects who had not lapsed to opiate use were seen at six weeks. Seventy-four of the original 80 subjects were interviewed at these stages. Four more subjects, who could not be traced earlier, were contacted at a follow-up interview at six months and these data are also included here. The information concerning lapse precipitants reported here is based on data from 58 subjects who lapsed.

This paper looks at events surrounding relapse. In order to avoid forcing the episode into only one category while ignoring other factors which appeared influential, we investigated risk factors present in each subject's account of renewed drug use. We believed that this mode of investigation would impose fewer constraints on the data and allow us to expand our knowledge of relapse precipitants.

Subjects were asked to describe the first occasion of opiate use following discharge. If not mentioned previously, they were prompted to indicate the relevant factors; that is, objects, situations, moods, other feelings or thoughts which led to use. They were encouraged to mention any factors at all which may have been relevant. They were also asked to identify the first factor and the most important factor leading to lapse. Subjects who used opiates more than once were also asked what led to their continued use of opiates.

The treatment programme through which subjects had passed involved a methadone detoxification phase followed by a rehabilitation programme. This is briefly described by Gossop *et al* (1989).

## Results

### Opiate users' accounts of their lapse episodes

Subjects' accounts of their first opiate use following discharge included many possible influences on and causes of their renewed opiate use. For example, one individual experienced a profound vacuum in her life. "I didn't know what else to do . . . I was feeling lost . . . I wanted to get back to something I knew." Another user described a chain of events culminating in use. "I left the unit on the spur of the moment . . . I was feeling bad that I'd screwed up again. I was looking forward to a fix, to getting out of my head." A third user felt low and wanted some excitement. "I was feeling bored, fed up and tired . . . I wanted a buzz . . . it was just something to do."

Inspection of the accounts of renewed drug-taking revealed distinct themes. Eleven categories were developed which provided a satisfactory description of the relevant circumstances. These were: cognitive, mood, external, withdrawal, interpersonal, leaving a clinic/hostel/prison, drug availability, drug-related cues, craving, priming, and social pressure. Each account of the circumstances of lapse was then examined to find out if an instance of each category had occurred. In an individual lapse episode there was often more than one type of risk factor and sometimes there was more than one instance of a specific risk factor.

*Cognitive factors.* This category was used when the drug user indicated an intention or plan to use; e.g. "I decided that I wanted to use when I left the unit"; "I thought I would try heroin once again and not use it afterwards."

*Mood states.* In the majority of cases these were dysphoric, including boredom, anger, sadness, loneliness, worry, tension, confusion; e.g. "I didn't know what else to do, I was feeling lost"; "I was just feeling bored."

*External influences.* This refers to events or situations unrelated to drug-taking which subjects said contributed to the lapse; e.g. "I came home to the flat . . . it was so filthy, I had to go and score to cope with it."

*Withdrawal symptoms.* This refers to symptoms, usually insomnia, which were associated with the withdrawal phase of treatment; e.g. "I wasn't sleeping" and "I was scared of being sick."

*Interpersonal influences.* This category was used when the individual indicated that seeing, meeting or thinking about another person during the events leading up to a lapse contributed to the lapse; e.g. "I knew I had to face up to relatives."

*Social pressure.* This refers to a direct or indirect offer of drugs; e.g. "I bumped into someone who owed me money and he offered me some 'gear' instead."

*Leaving a clinic, hostel or prison.* This was rated as present if the drug user complained that removal of such support led to use of opiates.

*Drug availability.* This category was used when subjects knew that they had ready access to opiates, perhaps because they were in the home of another user or because they knew that drugs were available in the area; e.g. "I found some heroin my brother had left in the house."

*Drug-related cues.* This refers to items or objects (other than drugs) directly associated with drug-taking, such as syringes or needles. This category also includes seeing other people under the influence of a drug.

*Craving.* This refers to a strong desire for, or preoccupation with, opiates; e.g. "I was craving every day, I could think of nothing else."

*Priming.* This category was noted as present when use of another drug, including alcohol, immediately preceded opiate use, and was mentioned by the subject as a cause of lapse; e.g. "If I hadn't had a drink I'd have been able to say 'No'."

### Relative importance of each factor

There are a number of ways of approaching the issue of relative importance. We asked each drug user to indicate which factor he/she viewed as being most important. However, many found it impossible to choose a single most important precipitant. Therefore we also examined the number of times circumstances were named as leading to lapse. This was assessed in two ways: by the number of individuals who mentioned each factor, and by the total

TABLE I

*Information about the circumstances of initial use of opiates following detoxification (number of subjects who lapsed = 58)*

| *Factor* | *Total no. of mentions* | *No. of subjects mentioning factor* | *No. of subjects judging the factor most important* | *No. of subjects indicating factor first in sequence* |
|---|---|---|---|---|
| Cognitive | 59 | 37 | 12 | 7 |
| Mood | 54 | 30 | 10 | 11 |
| External | 52 | 29 | 2 | 4 |
| Withdrawal | 23 | 16 | 5 | 2 |
| Interpersonal | 20 | 16 | 2 | 2 |
| Leaving clinic, hostel or prison | 18 | 17 | 3 | 7 |
| Drug availability | 15 | 14 | 3 | 4 |
| Drug-related cues | 14 | 13 | 3 | 4 |
| Craving | 14 | 12 | 3 | 3 |
| Priming | 10 | 10 | 2 | 3 |
| Social pressure | 5 | 5 | 1 | 1 |

number of times each factor was mentioned (because a given factor could occur more than once in a given lapse event; for example, some individuals felt both angry and sad; this would count as two mood factors). Many accounts of lapse revealed chains of events. Therefore, we recorded the user's view on which factor occurred at the beginning of the chain, since the identification of the first link in the chain may have important implications for relapse counselling.

Cognitions, mood and external events emerge as the circumstances mentioned by the greatest number of subjects as being associated with the initial lapse (see Table I). Cognitive factors were mentioned by 37 subjects (64% of lapsers), moods by 30 (52%) and external events by 29 (50%). The same three factors were mentioned more often than any other factor, and each of these three risks occurred on average more than once in an initial lapse episode. Cognitive and mood factors were seen by the subjects as particularly influential in leading to lapse; in contrast, external factors were judged by only two individuals to be the most important lapse precipitants. Mood, cognitive factors and leaving clinic/hostel/prison were reported to be the most common initial factors in the chain of events which led to the first lapse.

Although cognitions and moods tended to be the most common factors associated with lapse, these were not necessarily the first risk factors to occur. Where relevant cognitions were identified, in only 7/37 cases (19%) did thoughts about drug-taking occur as the first link in the chain of events. Where mood states were mentioned, they were twice as common in the first identified stage in the chain, occurring there in 11/30 cases (37%). The reality is likely to be more complex than this. One may recollect a mood or a thought because it was especially salient, but it may have been elicited by an event which was less notable or less memorable. External events were commonly mentioned as being related to lapse, but they were rarely judged to be the first (four instances) or the most important (two instances) causes of lapse.

TABLE II

*Information about the circumstances associated with continued use of opiates following lapse (number of subjects who responded = 44)*

| | *Total no. of mentions* | *No. of subjects mentioning factor* |
|---|---|---|
| Cognitive | 25 | 22 |
| Mood | 17 | 11 |
| External | 11 | 8 |
| Withdrawal | 10 | 9 |
| Craving | 3 | 3 |
| Drug-related cues | 2 | 2 |
| Interpersonal | 2 | 2 |
| Drug availability | 1 | 1 |
| Priming | 0 | 0 |
| Social pressure | 0 | 0 |

### Factors associated with continued use of opiates

Cognitive, mood, external factors, and withdrawal symptoms were the most frequently mentioned factors which drug users linked with continued opiate use following the initial lapse (Table II). This pattern is similar to that shown for initial use. No-one mentioned priming or social pressure, and few regarded interpersonal factors, drug-related cues or craving as being associated with continued use.

## Discussion

We have identified 11 categories of event, some intra-individual and some external, which are linked with the initial lapse to opiate use following a period of abstinence. As indicated by Gossop *et al* (1989), the greatest number of initial lapses occurred within a week of the subjects leaving in-patient treatment. This may reflect the power of environmental influences in leading to renewed drug-taking. The majority of our patients returned to their normal environment, where drugs were readily available and where drug-related cues may have been widespread.

Our results also suggest the importance of intrapersonal factors such as cognition and mood. Almost two-thirds of those who lapsed reported cognitive factors as important contributors. These usually involved an explicit decision or plan to use opiates, often stemming from boredom, or from curiosity to sample the effects again. Some indicated that they used opiates in order to test themselves. Others appeared to persuade themselves that they could control their drug use and become occasional users. These results raise the question of where the relevant cognitions stem from. We have only incomplete answers to this. The presence of drug-related cues in itself may cause drug users to develop more positive attitudes towards the drug, as has been reported for alcohol abusers (Cooney *et al*, 1987). From a behavioural perspective, it is hardly surprising that some ex-addicts have positive attitudes towards drug-taking and engage in planning to use again. Drug use functions as a powerful reinforcer, whether to remove dysphoria or to induce euphoria. Many users lack alternative means of achieving these ends, and, after years of habitual drug-taking, many individuals will experience a vacuum in their lives when they give up drugs. In the absence of other easily obtainable reinforcers, the attractiveness of drugs will be greater. Plans to use again will then simply reflect the addicts' attempts to acquire these important reinforcers.

More than half of the subjects indicated that negative mood states, such as sadness, loneliness, boredom, tension or anxiety, were directly associated with lapse. Negative mood states may reflect higher than average levels of neuroticism (Gossop & Eysenck, 1980) or dysphoria. This may provide a partial explanation, but unpleasant feelings are often not simply spontaneous or 'irrational': they can be realistic and normal responses to objective problems. In an example mentioned above, one of our clients felt overwhelmed when she saw the filthy state of her flat, and used opiates to cope. We can view this as an example of poor problem-solving. When the problem (a filthy home) was encountered, the individual set out to solve a consequence of the real problem (the feeling of being overwhelmed), but the solution to this (using drugs) simply led to the continuation or even exacerbation of the first problem. Training in problem-solving has proved useful in reducing the chances of relapse in heroin addicts (Platt & Metzger, 1987) and in alcohol abusers (Chaney *et al*, 1978).

While our method of categorising risk situations differed from that of Marlatt, one might expect to find parallel results. However, there is a notable discrepancy concerning the importance of social pressure. Marlatt found this to be the most important relapse risk, whereas we found it to be the least important. This apparent discrepancy may be due to our focused definition of social pressure. It is possible that some of our interpersonal, drug-availability and drug-related cues may have been judged by Marlatt as constituting social pressure. We found little evidence that positive emotional states were associated with lapse in our sample. We have also drawn attention to the importance of cognitive factors, such as plans and decisions to use opiates again, as lapse influences. Marlatt's model does indeed take account of cognitions, even though he does not explicitly mention their role in his classification of high-risk situations (Marlatt & Gordon, 1985). Our findings are generally compatible with those of Litman *et al* (1983), who found that alcoholics perceived the same three influences, unpleasant mood states, external events and cognitive factors, to be most important in relapse.

Behavioural models of drug-taking have emphasised the importance of withdrawal symptoms in relapse (Wikler, 1980). In support of this view, more than a quarter of our lapsers mentioned that withdrawal symptoms had contributed to their lapse, suggesting that withdrawal may act as a negative reinforcer for renewed drug-taking. In most cases, the withdrawal symptoms appeared to be residual symptoms which persisted beyond the detoxification period, rather than being elicited by drug-related cues. Withdrawal symptoms can persist for several weeks after detoxification (Gossop *et al*, 1987). Our data do not provide direct evidence in support of Wikler's theory that *conditioned* withdrawal symptoms, elicited by environmental stimuli, play an important role in relapse. Environmental effects do appear to be among the strongest influences, but our subjects did not report that their reactions to such situations were similar to withdrawal. Cues which were closely associated with drug-taking were implicated in approximately one-fifth of lapse episodes, but in only one-quarter of this small group did the users consider them to be the most influential factors in their lapse, despite the fact that these cues, being so intimately connected with the act of drug-taking, should stand the best chance of eliciting conditioned withdrawal reactions. We do not dispute the observations that such conditioned withdrawal can occur, but our users' reports suggest that conditioned withdrawal, *identifiable as such to the subject*, is rarely a relapse precipitant. Nevertheless, these results should not be taken as disconfirming a conditioning model. There remains the possibility that environment, mood or other cues elicit reactions, based on the ex-addict's previous learning history, which increase the likelihood of relapse.

Our findings indicate the importance of cognitions, mood and external factors in leading to renewed drug-taking. However, lapses did not occur as a result of these factors acting in isolation, nor were such influences necessarily prime movers; instead, mood states and cognitions were influenced by events in the individuals' lives. A complete model of lapse to drug-taking should take account of interactions between external events, cognitions and moods in leading to renewed drug use.

### *Clusters*

Individuals who return to live with other drug users expose themselves to vastly greater risks. A number of the following factors are likely to be present: increased drug availability, social pressure to use, seeing others using, and being exposed to other drug-related cues such as syringes and needles. The individual is also more likely to think of drugs in such an environment; therefore, many risk factors will be present in such a situation. Individuals who retain drug-using friends will also stand an increased chance of being exposed to some or all of the above risks.

Leaving the treatment unit without arranging suitable accommodation or work was found to be associated with increased risk. Some subjects described this as a precipitant of a lapse to opiate use. In this situation it is all too easy to re-establish contact with drug-using friends. Even if individuals resist this, they are likely to feel lonely or bored, feelings which are commonly associated with lapse. Also, some types of work carry an increased risk of return to drugs. We have had patients who worked in the rock music business, where drugs are readily available, earnings are often high, and work colleagues are more likely to use drugs. In this area of work, attitudes towards drugs are often favourable and the use of drugs may be seen as part of an alternative and superior lifestyle. Such factors greatly erode the individual's chances of remaining drug-free.

### *Sequences*

Many individuals described the events leading to their lapse as a sequence. This is illustrated, for instance, by the woman who lapsed just after discharge from the drug dependence unit. When she returned to her home she said it "was so filthy, I had to go and score to cope with it." It is difficult to assign a simple cause to her lapse, since a number of factors contributed. Her flat was in a mess because she had allowed other addicts to use it during her stay in the drug treatment unit and had not planned to clean it up prior to living there. When she entered the flat she felt overwhelmed and disgusted by the mess, and she had failed to learn a way of coping with these feelings other than drug-taking. She regarded the most important factor in leading to her lapse as the "mess", an external factor. However, the lapse occurred at the end of a chain of events, and intervention at a number of links in the chain could have helped reduce the likelihood of renewed drug use. She could have anticipated and planned her return home; her feeling of being overwhelmed could have been reduced by taking on one limited task at a time; she could have learned alternative coping strategies such as increasing her ability to tolerate such feelings without impulsively seeking to blot them out. Thus, while the immediate cause of lapse appeared to her to be an external event, it may be more constructive to view it as resulting from a failure to anticipate and plan how to deal with the situation.

### *Cognitions and negative mood states*

Cognitions and negative mood states are especially important influences in renewed opiate use. These factors may arise from the general lifestyle, or from maladaptive problem-solving patterns of the drug user. Alternatively, they may themselves be the overriding influences in relapse. In the latter case, cognitive and behavioural change strategies may be important in reducing the risk of relapse. Beck & Emery (1977) and Marlatt & Gordon (1985) have described approaches which suggest many ways of tackling cognitions and moods which may lead to a risk of relapse.

### *Lapse and relapse*

The most common reasons our users gave for continuing to take opiates after the first lapse were similar to those identified as contributing to that lapse, namely, cognitive, mood and external factors; withdrawal symptoms were also judged as influential. This supports the view that interventions aimed at reducing the risk of lapse may also protect against a complete relapse, even after the individual has begun drug use again.

### *Clinical implications*

These results have a number of clinical implications. Support could be provided in the period immediately following discharge from an in-patient unit. This might involve a graduated return to living independently of the unit. Home visits could be restricted to an hour or two at first and increased so that the ex-drug user had a chance to spend at least a day or two at home before discharge. This graduated programme would allow problems to be anticipated and coping strategies to be defined and practised. The drug user could be encouraged to phone the unit to discuss problems at this early stage. Mixing with current drug users, especially visiting their homes, should be discouraged. Help and encouragement may be needed to develop a new social group.

Many individuals are unemployed and find that they feel bored and dissatisfied, feelings which are associated with relapse. Work rehabilitation can be a critical factor in successfully staying off drugs. Some individuals work in high-risk occupations where a number of risk factors combine to increase the chances of relapse. Such individuals may have to change jobs to reduce the risk to an acceptable level. In the case of medical and nursing personnel, it may be possible to work in a field where they do not come into direct contact with drugs.

In general, an analysis should be made of risk factors which the individual is likely to experience, using knowledge of past relapses and information from home visits. Drug counselling should concentrate on alerting the individual to these risks and encouraging him or her to develop plans to avoid or deal with them effectively.

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# Opiate Withdrawal Symptoms in Response to 10-Day and 21-Day Methadone Withdrawal Programmes

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This study investigates and compares the responses of 132 opiate addicts to a 10-day or a 21-day in-patient oral methadone withdrawal regime. For both groups, symptom severity (on the Opiate Withdrawal Scale) steadily increased through the methadone withdrawal phase, and peaked near the point of completion of the prescribed drug, declining slowly thereafter. Patients on the 10-day programme reported significantly higher peak withdrawal scores than those on the 21-day programme. Although the proportions who completed detoxification were similar, there was a significantly higher drop-out rate immediately after detoxification for the 10-day group. The possible benefits and handicaps of the two withdrawal schedules are considered and recommendations are proposed for further refinement of the present widely adopted approach.

Withdrawing opiate addicts from drugs is frequently done as a preliminary stage of treatment, and although detoxification alone has been shown to be ineffective for long-term abstinence (Lipton & Maranda, 1983), the withdrawal phase is a necessary but not sufficient condition for this. One of the most widely used methods of withdrawal involves gradually reducing doses of oral methadone. This technique has been popular since the early work of Isbell & Vogel (1948), and is probably the most common procedure; it has been suggested that as many as 10 000 opiate addicts may be withdrawing on methadone at any one time in the United States (Kleber *et al*, 1980).

It is clear that methadone has had considerable success as a withdrawal agent. Previous British studies found that more than 80% of in-patient samples could be successfully withdrawn from drugs using methadone (Gossop *et al*, 1986, 1987*a*). However, it has also been suggested that the widespread clinical acceptance of methadone withdrawal schedules may have diverted attention from its weaknesses (Gossop & Bradley, 1984). One problem is that they reduce but do not eliminate withdrawal symptoms. The withdrawal response during treatment has been likened to a mild case of influenza (Kleber, 1981), and has been described as being objectively mild but subjectively severe. Gossop *et al* (1982) found that many opiate addicts were frightened of withdrawal and such beliefs and expectations should not be underestimated: these factors are associated with the subsequent severity of withdrawal symptoms, and they are more closely related to symptom severity than, for instance, drug dosage (Phillips *et al*, 1986).

Another drawback of methadone withdrawal is that residual symptoms take a long time to resolve. In a comparison of methadone and electrostimulation procedures, Gossop, *et al* (1984) found that although methadone was more effective in reducing symptom severity, it led to a prolonged withdrawal response, with patients still reporting moderate discomfort 10 days after detoxification. This protracted withdrawal response was confirmed by a later, more extensive trial, which found that patients were still experiencing significantly more symptoms than controls two weeks after the discontinuation of methadone (Gossop *et al*, 1987*b*). It was suggested that different methadone regimes might reduce the severity and duration of withdrawal symptoms and be more acceptable to patients. The present study looks at these suggestions, by comparing the responses of addicts on a 10-day and a 21-day withdrawal programme.

## Method

### Subjects

Data are presented for 132 subjects. All were physically dependent upon opiates. (Strictly speaking, one should refer here to 'opioid' drugs, since a small number of patients were primarily dependent upon methadone. We have used the term 'opiate' in preference to its more accurate but uglier alternative.) The most common drug of dependence was illicit heroin, with a modal dose range 'between ¼ and ½ gram' (street doses) per day. The majority of subjects attending this unit during the study were relatively long-term heroin users, with the majority having begun to use opiates regularly during their late teens. Most subjects had used opiates regularly for more than five years. The mean age of subjects was 27.5 years, with the great majority aged 20–35 years. Almost all of the 132 subjects used other drugs on an occasional or regular basis. The ranges and possible combinations of drug use are bewilderingly complex, as well as variable over time. The general characteristics of addicts attending this treatment centre have been described elsewhere (e.g. Bradley & Gossop, 1982; Johns & Gossop, 1985; Gossop *et al*, 1987*a*), and the present samples were directly comparable. The sex ratio was biased towards males, being approximately 3 : 1.

All had voluntarily requested to be withdrawn from drugs within the facilities of the Bethlem Royal Hospital and the Maudsley Hospital, London. Their addiction was confirmed before admission by clinical examination, self-reported drug histories (regular daily use of opiates), and laboratory analyses of urine samples for a range of opiates and their metabolites. In addition, addiction was confirmed by their responses to methadone during the titration period. All were admitted to an in-patient unit for a programme of treatment and rehabilitation. The withdrawal procedures described in this paper were the preliminary stage of a more extensive treatment package.

Fifty patients were withdrawn from opiates over 10 days and 82 over 21 days. Subjects were not allocated randomly to the two treatment options, and the withdrawal procedure was not administered blind; all subjects were told at admission how long their withdrawal would take. The two procedures were not adminstered 'side by side'. Thus, this paper presents a research commentary upon a change in clinical practice over time, with the 21-day programme being supplanted by the 10-day programme. These features of the study design should be taken into account in interpreting the results. All subjects requiring withdrawal from opiates received the package being implemented at the time of their admission. All subjects received a gradual linear reduction of oral methadone after their drug requirements had been ascertained. This was done during the first three days after admission, when 'trial' doses of methadone were given. These initial doses were based on self-reported or other information about use before admission. The dose was then titrated according to the patients' responses until the starting dose for withdrawal had been established.

Information was collected on withdrawal symptoms by means of a 20-item version of the Opiate Withdrawal Scale (OWS). This is a self-completion instrument that provides a satisfactory measure of withdrawal distress. Versions of the OWS have been used in several previous investigations of the opiate withdrawal syndrome (Gossop *et al*, 1984; Phillips *et al*, 1986; Gossop *et al*, 1987*b*). The OWS items all load heavily on a single 'withdrawal' factor, and the total OWS score correlates extremely highly with the factor score, indicating that the total withdrawal score is a valid measure of withdrawal; in addition, the scale discriminates effectively in the measurement of withdrawal and post-withdrawal states (Bradley *et al*, 1987). Each of the 20 items is rated according to its severity during the previous 24 hours on a four-point scale (nil, 0; mild, 1; moderate, 2; severe, 3). The 20 items are: feeling sick, diarrhoea, stomach cramps, stiffness of arms and legs, spontaneous twitching, trembling hands, feelings of coldness, gooseflesh, hot and cold flushes, increased sweating, runny nose, heart pounding, fatigue or tiredness, muscular tensions, aches and pains, weakness, yawning, sneezing, runny eyes, and insomnia.

All patients completed the OWS at admission, on the first day of withdrawal, and at regular intevals up to day 35 after the first day of withdrawal. For the 21-day group, data were collected at five-day intervals. In order to allow for greater sensitivity to changes in symptomatology, and to compensate for the reduced withdrawal period, for the 10-day withdrawal the data were collected every two days. Despite this difference, there are overlaps in the measurement points (at admission, and on withdrawal days 1, 5, 15, 25, 35), and the 'withdrawal curves' for both groups can be plotted and compared, and the score for the two groups compared in a number of important respects (notably with regard to maximum withdrawal severity).

## Results

Total withdrawal severity scores for both groups are shown in Fig. 1. The mean total scores for both samples are plotted against time. It can be seen that the curves for the groups are similar. In both, the mean daily score rises from a similar starting point at admission to a peak around the end of the methadone phase of withdrawal. For the 21-day group, the peak is on day 20. For the 10-day group, the peak is on day 13, soon after the last dose of methadone. The 10-day group reported a significantly higher peak withdrawal score than the 21-day sample, the means being 31 and 25 respectively ($t = 1.79$, s.d. $= 15.5$ and $13.2$, $P < 0.05$).

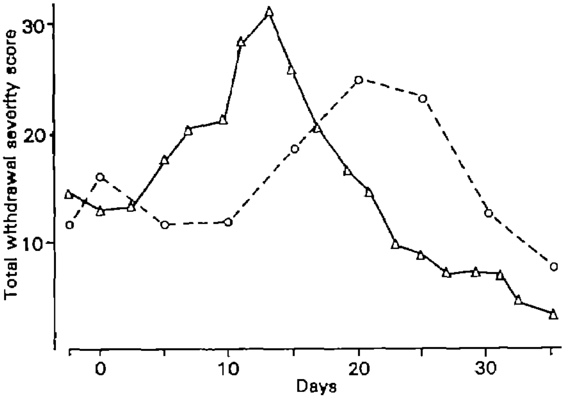

Fig. 1 Means of total withdrawal severity scores on the OWS of the 10-day sample (△——△) and the 21-day sample (O—O) at admission (first point plotted) and at days after the first day of withdrawal.

The data were also analysed with regard only to those symptoms rated as 'severe', as a 'severe' score on one symptom may indicate a level of suffering that is not equivalent to experiencing mild discomfort on a number of measures. The mean daily severe scores were calculated and plotted for both groups. The resulting graphs reflected the same pattern of symptoms shown in Fig. 1 total scores, with the withdrawal curves starting at the same level and peaking on days 13 and 20. Again, the 10-day sample exhibited a significantly higher peak, with a score of 15 as opposed to 8 for the 21-day group ($t = 1.92$, s.d. = 17.6 and 13.1, $P < 0.05$). A comparison of the total duration of symptoms showed no difference between the 10-day and 21-day schedules. There was no significant difference between the two samples in the total number of days on which at least one severe symptom was recorded, i.e. for which the mean score is greater than an average of one severe symptom per subject ($\chi^2 = 0.51$, $P = 0.47$, NS).

The rate at which addicts complete detoxification to achieve a drug-free state is one important indicator of success. A comparison was therefore made between two samples of addicts withdrawn from opiates under each of the withdrawal programmes. These samples were drawn from all admissions to the in-patient unit during a 12-month period when both withdrawal schedules were being used. The sample sizes are 80 and 132, for the 21-day and 10-day programme respectively. These samples overlap with but are not identical to the samples for which the OWS data are reported. The proportion of patients remaining in treatment until the end of withdrawal (i.e. the first drug-free day) was the same for both groups. In the 21-day group, 78.7% ($n = 63$) completed withdrawal; in the 10-day group, 70.5% ($n = 93$) completed. There is no statistically significant difference between these results ($\chi^2 = 1.36$, $P = 0.24$, NS). However, the drop-out rates do differ over time, particularly after detoxification. During the 10 days after the last dose of methadone, the drop-out rate for the 21-day group was 17.5% ($n = 14$) compared with 30.3% ($n = 40$) for the 10-day group ($\chi^2 = 9.1$, $P < 0.05$).

Two points of clinical interest during the data collection period are the days on which patients in the two groups finished their active methadone phase of treatment. Statistical comparisons of the two groups at the end of both withdrawal periods were conducted both with regard to total withdrawal and to severe withdrawal scores. The groups differed on both measures. At the 10-day point, the 10-day withdrawal group reported significantly higher symptom levels than the 21-day group (for total score, $t = 4.30$, s.d. = 15.9 and 10.7, $P < 0.001$; for severe score, $t = 2.74$, s.d. = 19.1 and 4.6., $P < 0.05$). Similarly, at 20 days, the 21-day group reported significantly higher symptom levels than the 10-day group (for total score, $t = 3.26$, s.d. = 12.2 and 13.2, $P < 0.001$; for severe score, $t = 2.16$, s.d. = 7.6 and 13.1, $P < 0.05$). These comparisons should be interpreted with caution because of the different time courses of the two withdrawal schedules.

## Discussion

It makes a difference how we treat the opiate withdrawal syndrome. Our results show that different types of methadone withdrawal schedules produce different responses, in terms of the time course of withdrawal, the severity of the withdrawal response, and possibly in terms of subsequent engagement with treatment.

Those addicts who were withdrawn over 10 days showed a withdrawal syndrome that began to increase in severity quite early in treatment (from day 3). Withdrawal scores increased in severity to peak after the end of the methadone phase (on day 13), and showed a gradual decline thereafter. In the 21-day group, symptoms began to increase at about day 10, peaked on day 20 (the last day on which they received methadone), and declined thereafter. In both groups, withdrawal symptoms were at their most severe at about the end of the gradual methadone reduction phase. This observation was confirmed both by measures based on total withdrawal scores, and by measures of severe symptoms only. Although the difference between peak withdrawal scores of the two groups is statistically significant, it is not clear whether it is clinically important.

There was also a statistical difference between the two groups with regard to the time course of withdrawal. For those patients withdrawn over 10 days, the period of greatest discomfort occurred earlier, but was matched by an earlier recovery from withdrawal symptoms. From a purely scientific point of view, this observation is relatively trivial, but it has clinical significance (it also has clear financial implications for treatment). Even though the duration of the withdrawal syndrome is much the same for both treatments in terms of severe symptoms, it may be important that patients should feel that they have recovered from withdrawal as quickly as possible, especially if drug-free and symptom-free functioning is required for some further stage of treatment.

One of the greatest drawbacks of the 21-day withdrawal schedule is that it leads to a protracted residual withdrawal response, with patients not fully recovered until 40 days after the beginning of withdrawal (Gossop *et al*, 1984, 1987). The same residual withdrawal effect can be seen in the present study for the 10-day reduction scheme. It is possible that this effect will turn out to be one of the greatest disadvantages of methadone as a withdrawal agent.

There was no difference between the 10-day and 21-day programmes with regard to completion rates for detoxification. Both were reasonably effective, with between 70% and 79% of the groups reaching a drug-free state. There was, however, a marked difference in terms of drop-out rates over the 10 days immediately after the end of detoxification, with 30% of the 10-day subjects discharging themselves from treatment, compared with 17.5% of the 21-day subjects. There are many variables unrelated to withdrawal that could have a powerful influence upon treatment retention, and about which we have no data in this study (including social interaction between patients on the unit, staff–patient relations, changes in patient characteristics, or treatment procedures across time). For this reason, caution is needed in attributing drop-out rates after detoxification simply to the withdrawal effects. Nonetheless, there must be some worries about the 10-day programme in this respect.

It is clear from the response to both withdrawal programmes that the period around the end of the methadone reduction schedule is the period of greatest discomfort for addicts. Some patients may belive that the last day of methadone should coincide with the last day of withdrawal discomfort, in which case the presence and severity of the residual symptoms may be especially unsettling. It has been shown that anxiety-related factors are associated with the severity of withdrawal (Philips *et al*, 1986), and that giving accurate but reassuring information can reduce distress (Green & Gossop, 1988). It would seem desirable to pay attention to the psychological factors associated with withdrawal, and include reassurance and information to reduce withdrawal distress and any subsequent drop-out from treatment after the actual detoxification procedure is complete.

This study has shown that it is possible to reduce the duration of the active withdrawal phase of treatment from 21 to 10 days using an oral methadone reduction scheme. This has been achieved without affecting detoxification completion rates, although there is a worrying suggestion of a higher drop-out rate subsequently. It would seem desirable to look for a procedure with the advantages of the shorter schedule but without its drawbacks. It is possible that improvements in the methadone withdrawal response could be achieved through the use of an exponential dose reduction rather than a linear schedule, and through the routine provision of information during withdrawal. Such modifications might be expected to have the effect of reducing peak severity and/or the residual withdrawal response. These suggestions are readily amenable to empirical investigation and deserve further research.

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# Sex Differences in the Differentiation of Psychiatric Symptomatology

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A study was conducted using data obtained from the first stage of a community survey in Spain, in which the 60-item version of the GHQ was administered to 1224 adults. Three hypotheses concerning respondents aged under 55 years were tested. The first was that in the context of a principal-components analysis, a greater proportion of the explained variance would be accounted for by the first (general) factor in women than in men. This was supported. The second hypothesis was that the intercorrelations between the GHQ-28 subscales would be greater for women than for men. This was refuted. The third hypothesis was that the differentiation between anxiety and depression would be greater in men than in women. This was supported. The differences investigated were found not to apply among respondents aged 55 years and over.

In recent years, psychologists have become increasingly interested in integrating cognitive and affective aspects of behaviour (Anastasi, 1985). To this end, an important construct is *cognitive style*, which refers to individual differences in modes of perceiving, remembering and thinking. The main concern is with the ways in which individuals conceptually organise the environment (by filtering and processing stimuli) so that it takes on psychological meaning.

The common thread in all research on cognitive style is an interest in the structure of thinking rather than its content (Goldstein & Blackman, 1978). One of the major approaches is that of Witkin *et al* (1979), in which the measurement of cognitive style is based on the study of perception and linked with the theory of psychological differentiation. According to this theory, people differ in terms of how well they can detach themselves from their surroundings and separate items from each other in the environment, with highly differentiated individuals being better at such tasks. The most researched, empirical aspect of psychological differentiation is the field dependence–independence dimension, developed from early studies of perception. Field-independent individuals are able to separate an item from the configuration in which it occurs, whereas the perceptions of those who are field-dependent are contingent on the surrounding environment. Field dependence is assessed by performance on simple perceptual tasks. However, differentiation theory encompasses intellectual as well as perceptual attributes. Thus, the field-independent person tends to be intellectually analytical, perceptually discriminating, and able to keep things separate in experience (Witkin *et al*, 1971).

This concept is relevant to the classification of psychiatric disorder, in that a field-independent individual would be expected to show a relatively clear-cut discrimination of neurotic symptoms. In contrast, the more global mode of perception of a field-dependent individual would be expected to lead to a more generalised and holistic experience of affective disorder. Parkes (1981, 1982) has reported findings in support of this, indicating that field-dependent subjects do not perceive certain patterns of symptoms as discrete and distinguishable entities. Rather, they experience symptoms as global and undifferentiated psychological disturbance.

One of the few clearly established findings in the psychology of sex differences is that males tend to be more field independent than females (Maccoby & Jacklin, 1975). Furthermore, several investigators have found that field independence declines in old age (Halpern, 1986). Unfortunately, the relationship between sex, symptoms and field dependence has not been explored directly. It can, however, be predicted that, other than among the elderly, there will be a sex difference in the differentiation of psychological symptoms. We tested this prediction using the General Health Questionnaire (GHQ; Goldberg, 1972, 1978); data were collected during the first stage of a community survey in Spain. Our specific hypotheses were that among respondents aged under 55 years:

(a) in the context of a principal-components analysis, a greater proportion of the explained variance would be accounted for by the first (general) factor in the women than in the men
(b) the intercorrelations between the GHQ-28 subscales (Goldberg & Hillier, 1979) would be greater for the women than the men

TABLE I
*Principal components analyses of the GHQ-60*

| | *Number of significant components* | *% variance explained* | *% explained variance due to general (1st) component* | *Mean (s.d.) loading on general (1st) component* |
|---|---|---|---|---|
| *Under 55 years* | | | | |
| Men | 16 | 61.5 | 31.7 | 0.421 (0.134) |
| Women | 14 | 60.6 | 39.6 | 0.466 (0.150) |
| | | | | ($z=4.42$, $P<0.0001$) |
| *55 years and over* | | | | |
| Men | 14 | 65.5 | 42.3 | 0.515 (0.113) |
| Women | 14 | 65.9 | 44.4 | 0.530 (0.112) |
| | | | | ($z=1.46$, NS) |

(c) the differentiation between anxiety and depression would be greater in the men than in the women.

It was further hypothesised that none of these differences would apply to respondents aged 55 years or more.

## Method

### Data collection

The two-stage screening survey whereby these data were collected has been described in detail by Vazquez-Barquero *et al* (1986, 1987). In brief, a random sample of adults (aged 17 years and over) was drawn from the electoral registers of three adjoining counties on the eastern border of the bay of Santander (an area with a population of just under 10 000). This community is representative of the non-urban coastal part of the province of Cantabria, the main industries being dairy farming, fishing and tourism.

In the first stage of the survey, respondents were visited at home by newly qualified doctors and final-year medical students, who administered the 60-item version of the GHQ, as well as a variety of other medical and social questionnaires. Data collected during the second stage were not used in the present analyses.

### Data analysis

Following Parkes (1982), three analyses were conducted. To test the first hypothesis, principal-components analyses of the GHQ-60 were undertaken for four groups defined by age and sex. The number of significant components (eigenvalues $\geq 1$) extracted for each sex was noted, as was the proportion of variance accounted for by the general (first) factor and the specific factors. For each sex, the average loading of the items on the general factor was calculated.

The GHQ-28 was then extracted from the parent version. To test the second hypothesis, scores on the four subscales were calculated, and for each sex a matrix of intercorrelations was obtained. The sex differences between the corresponding pairs of intercorrelations were tested using Fisher's (1928) transformation.

To test the third hypothesis, principal components analyses were carried out on the items from the GHQ-28. Four factors were retained for varimax rotation, and for each sex the resulting factor structure was compared with that obtained by Goldberg & Hiller (1979).

## Results

There were 772 respondents (366 men, 406 women) aged under 55 years, and 452 respondents (218 men, 234 women) aged 55 years and over.

Table I shows the results of the principal-components analyses of the GHQ-60. The number of significant components and the variance explained by them was very similar for each of the four subgroups. However, the proportion of the explained variance due to the first (general) component was markedly less in the younger men than in the younger women; there was no such gender difference among the older respondents. Table I also shows the mean item loading on the first component. This was significantly lower for the younger men than the younger women: again, there was no gender difference in the older age category. Hypothesis (a) is therefore supported.

The intercorrelations between the GHQ-28 subscales are shown in Table II. Among the younger respondents, the gender difference was in the predicted direction (women >men) for only three of the six correlations: moreover, none of these differences was significant. Similarly, there were no significant differences in the predicted direction in the older age category. Hypothesis (b) is therefore refuted.

Relevant results from the factor analyses of the GHQ-28 are displayed in Table III. Only items with loadings $\geq 0.35$ are shown (Parkes, 1982). The labels 'anxiety' and 'depression' are those given to the factors by Goldberg and Huxley, and the differentiation between them is demonstrably greater among the younger men than in the other three subgroups. Hypothesis (c) is thus supported.

TABLE II
*Product-moment correlations between GHQ subscales*

| | *Depression v. anxiety* | *Depression v. somatic symptoms* | *Depression v. social dysfunction* | *Anxiety v. somatic symptoms* | *Anxiety v. social dysfunction* | *Somatic symptoms v. social dysfunction* |
|---|---|---|---|---|---|---|
| *Under 55 years* | | | | | | |
| Men | 0.577 | 0.515 | 0.173 | 0.607 | 0.144 | 0.238 |
| Women | 0.634 | 0.471 | 0.138 | 0.636 | 0.214 | 0.198 |
| | (z=0.79, NS) | — | — | (z=0.40, NS) | (z=0.97, NS) | — |
| *55 years and over* | | | | | | |
| Men | 0.630 | 0.510 | 0.124 | 0.636 | 0.235 | 0.270 |
| Women | 0.621 | 0.502 | 0.147 | 0.643 | 0.286 | 0.296 |
| | — | — | (z=0.24, NS) | (z=0.07, NS) | (z=0.54, NS) | (z=0.27, NS) |

TABLE III
*Factor loadings of items from the GHQ-28*

| | *Under 55 years* | | | | *55 years and over* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Men* | | *Women* | | *Men* | | *Women* | |
| | *Anxiety* | *Depression* | *Anxiety* | *Depression* | *Anxiety* | *Depression* | *Anxiety* | *Depression* |
| GHQ14 | 0.6091 | — | 0.5502 | — | 0.6391 | — | 0.6076 | — |
| GHQ18 | 0.3945 | — | 0.3626 | 0.3386 | 0.4430 | — | — | — |
| GHQ39 | 0.7014 | — | 0.6751 | — | 0.5949 | — | 0.6999 | — |
| GHQ44 | 0.6251 | — | 0.7257 | — | 0.5557 | — | 0.7123 | — |
| GHQ45 | 0.4870 | — | 0.4588 | — | 0.4413 | 0.3984 | 0.5503 | — |
| GHQ47 | 0.6571 | — | 0.7080 | — | 0.6907 | — | 0.5305 | 0.3520 |
| GHQ55 | 0.7295 | — | 0.7389 | — | 0.5966 | — | 0.7501 | — |
| GHQ51 | — | 0.3982 | 0.4828 | — | 0.4543 | — | — | — |
| GHQ52 | — | 0.4462 | 0.3620 | 0.3908 | 0.6155 | — | — | 0.4926 |
| GHQ56 | — | 0.6058 | 0.4272 | 0.5749 | 0.4799 | 0.5529 | 0.5334 | 0.3999 |
| GHQ57 | — | 0.8524 | — | 0.7933 | — | 0.8603 | — | — |
| GHQ58 | 0.5343 | 0.4037 | 0.6386 | — | 0.6024 | — | 0.6298 | 0.3590 |
| GHQ59 | — | 0.8932 | — | 0.8492 | — | 0.6571 | — | 0.7381 |
| GHQ60 | — | 0.8843 | — | 0.8913 | — | 0.8600 | — | 0.8093 |

## Discussion

One of the most consistent findings in the literature dealing with sex and morbidity is that women have more illness experience than men, a tendency which applies to both mental and physical disorders as well as use of the health services. It is socially more acceptable for women to report themselves ill, and it appears that this is not due merely to their greater willingness to report symptoms but rather reflects underlying psychological differences in masculinity and femininity (Briscoe, 1982). The findings from the present study fit in with such a perspective, in that they indicate a sex difference in the generalisation of patterns of symptoms, at least in the younger age groups. Hypotheses (a) and (c) were supported, with the women showing a higher loading on the first unrotated factor in the principal-components analysis and also a lesser degree of differentiation between anxiety and depression. This suggests that women are more inclined to suffer from vague symptoms, which could account for their greater predisposition towards medical consultation.

These findings should also be considered in the context of earlier observations that field independent subjects characteristically place less reliance on external sources for definition of their attitudes and judgements and are relatively inattentive to cues from others (Witkin, 1965). It would follow from this that help-seeking behaviour would be less pronounced in the more field-independent sex, and men are indeed known to make less use of health services. When they do consult, men come with more specific problems, which doctors seem to find it easier to diagnose and hence treat (Briscoe, 1987). The results reported above also indicate that men discriminate between symptoms in ways which fit in with doctors' expectations. This implies that women may be more difficult to diagnose because of the ways in which they perceive and report symptoms.

Possible alternative explanations of the findings are that they arise from (a) the nature of the psychopathology within the four age/sex subgroups and/or (b) the nature of the instrument. With regard to the first point, it is conceivable that apparent perceptual discrepancies between the groups may be due to incomparability on observer-rated symptomatology, using the latter as a measure of the reality as opposed to the perception. It would, therefore, have been of interest to know to what extent they were comparable on observer-rated scales. Unfortunately, this issue could not be addressed here, even though the data were taken from a two-stage screening survey. This is because the Present State Examination, used as the second-stage instrument, is a diagnostic device operating according to a set of hierarchical rules. Thus, coexistent anxiety and depression are always classified as depression, so that the second stage data cannot usefully be applied to classify the subgroups. The second explanation concerns the possible contribution to the results of the instrument itself. Since the GHQ was developed by a male researcher under the age of 55, it is conceivable that perceptual differences may be highlighted if the structure of the instrument is such that recognition is promoted in one sample group as opposed to others. Replication of the findings using other instruments would help to clarify this point.

The major theoretical problem in the field of gender and health concerns the ways in which men and women recognise and label symptoms. The potential usefulness of applying the concept of cognitive style to this was suggested by the observation that it is associated with the *form* rather than the *extent* of clinical problems. For example, depressed patients tend to be field dependent and paranoid patients to be field independent (Witkin, 1965). Such findings clearly parallel the observation that women are more prone to depression and men to become paranoid. Clearly, findings of sex differences from studies of cognitive style concern *average* differences obtained from groups of men and women. There is considerable between-sex overlap with respect to these abilities, with many men being field dependent and, conversely, large numbers of women demonstrating high degrees of field independence. The findings from the present study merely serve to indicate the potential utility of the concept of cognitive style in understanding sex differences in symptom perception. The negative finding in relation to hypothesis (b) is disappointing, but perhaps hardly surprising in view of the exploratory nature of the study. The absence of a sex difference in the older age group is in line with previous work, which implies that differences due to male attributes tend to decline with age, whereas this is not true of those arising out of female characteristics (Briscoe, 1980). Further studies designed to explore the relationship between sex, symptoms and cognitive style should be helpful in shedding more light on sex differences in morbidity and use of health services.

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# Characteristics of Psychiatric Hospital Absconders

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Absence of patients without leave is common in psychiatric hospitals, and causes anxiety to staff, relatives, and the lay public. Such incidents are difficult to predict. This study attempted to identify the characteristics of patients absconding from a UK hospital over one year. Numbers were small, as those patients discharged against advice and failing to return from leave were excluded. Absconders were predominantly male, young, compulsorily admitted, and discharged with a diagnosis of schizophrenia. They tended to be single, had many previous admissions, and a longer total length of stay, and the police were more often involved in their admission. Reasons for absconding and the implications for management of newly admitted psychiatric patients are discussed.

A patient absent without leave (AWOL) produces considerable anxiety on the part of staff, relatives and the lay public, and involves a great deal of staff time in notification, search and inquiry, to the detriment of the care of other patients.

The only three UK studies on this subject in the last 25 years failed to identify consistent characteristics (Muller, 1962; Milner, 1966; Antebi, 1967). The US literature is complicated by frequent failure to distinguish between AWOL patients and those discharged against medical advice, although the two groups are known to differ (Atkinson, 1971; Altman *et al*, 1972; Steinglass *et al*, 1980). It is acknowledged that AWOL behaviour is difficult to predict (Evenson *et al*, 1975; Altman *et al*, 1972), but a history of many previous admissions, male sex, single status and younger than average age were the best predictors.

The present study set out to define the characteristics of patients absconding from a UK hospital, and to assess the implications for management.

## Method

A prospective study of all patients reported as AWOL from Barrow Hospital during one calendar year was carried out. Barrow Hospital is a villa-style psychiatric hospital, providing the bulk of the psychiatric services in adult mental illness for South Bristol and environs (with an approximate population of 300 000). It is seven miles from the city centre, in wooded countryside, and has 316 beds served by six consultant teams, 100 of which are for elderly patients and 47 for long-stay patients. Two wards (32 beds) are single-sex wards for 'disturbed' patients, but there are no locked wards or seclusion facilities. Some wards for the elderly require two hands to open doors.

Absence of a patient from a ward sufficient to cause concern on the part of trained nursing staff is reported on a standard form and forwarded to administrative staff. These forms were scrutinised by the author and the case notes analysed.

Patients discharged against medical advice and those failing to return from authorised leave from hospital were excluded from the study. A randomly selected sex-matched control group of 35 was identified to allow comparison on certain variables. The $\chi^2$ test with Yates' correction was used as the statistical test for significance throughout, except where stated. Percentages have been rounded to the nearest whole number.

## Results

There was a total of 1085 admissions, giving rise to 95 AWOL incidents involving 35 patients during the year of the study. Thirteen patients absconded on more than one occasion, including five patients who were admitted twice during the year and absconded during both admissions. Excluding second and subsequent incidents on each admission there was a total of 40 'first incidents'. The pattern of incidents throughout the year did not match the pattern of hospital admissions.

### Demographic characteristics

The 40 admissions resulting in absconding represented approximately 4% of all admissions that year. Of the 35 absconders, 20 were male (57%) and 15 female (43%), in contrast to the non-absconding hospital admissions, of whom 36% were male and 64% female ($\chi^2=5.774$; d.f. $=1$; $P<0.01$). The mean ages of male and female absconders were 39.2 (20–67) and 32.4 (18–54) years respectively. This was significantly younger than the controls, whose mean ages were 44.3 (22–77) and 43.3 (24–73) years respectively. The standard error of difference between the means was ±3.186 years for males ($P<0.001$) and ±2.933 years for females ($P<0.001$).

Seventeen absconders were single, six married, and eight divorced or separated. There were two widowers and two men were of unknown status. This contrasted with the control group, of whom 11 were single, 14 married, seven divorced or separated, and three widowed. These differences did not reach statistical significance and there were no sex differences in the trends.

Eight subjects lived alone, and a further eight lived independently but with shared facilities. Nineteen lived with a spouse or cohabitee or family. The type of accommodation was unknown in two cases. Of the rest, 13 lived in shared accommodation (hostels, bedsits and lodging houses) and the rest in 'private' accommodation. Only seven subjects were in employment. One man was retired, there were two housewives, and two people were in full-time education. The other 23 (66%) were unemployed at the time of admission. There were no significant sex differences relating to type of accommodation or employment status.

### Admission characteristics

Half the admissions were on weekdays in both the study and control group. Ten admissions in the study group (25%) were via the consultant team and 11 (28%) via the general practitioner (12 (34%) and 9 (26%) respectively for controls), but 8 (20%) absconders were initially admitted via the police or courts (half of them informally) compared with one of the control group ($\chi^2=3.698$; d.f. $=1$; $P<0.05$). Twelve absconders (30%) were admitted formally under the Mental Health Act 1983, in marked contrast to the 66 (6%) formal admissions to the hospital as a whole ($\chi^2=30.593$; d.f. $=1$; $P>0.001$).

Thirty cases (86%) had had previous admissions to hospital compared with 630 (62%) of the other admissions for that year. There were no significant sex differences.

Diagnoses assigned at discharge by the patient's consultant covered virtually the whole of the diagnostic range, from organic psychoses through functional mental illness to personality disorders. Comparison of diagnosis is on the basis of discharges for the year, which totalled 1063 excluding the 40 discharges involving absconders. Schizophrenia accounted for five male and six female abscondings (21% and 38% respectively), as against 42 schizophrenic males and 40 females in the non-absconders discharged in that year (11% and 6% respectively). These differences were not significant for males ($\chi^2=1.346$; d.f. $=1$; $P<0.1$) but highly significant for females ($\chi^2=20.292$; d.f. $=1$; $P>0.001$). Four women were discharged with the diagnosis of personality disorder (25%), compared with 34 (5%) of the other female discharges for that year ($\chi^2=8.471$; d.f. $=1$; $P<0.001$). Other differences in diagnosis failed to reach statistical significance, although manic men were over-represented among absconders compared with the rest of the hospital population (17% v. 4%), whereas depressed women were under-represented (13% v. 42%).

There was a tendency for absconders to have a longer total length of stay in hospital than others, with eight (23%) staying longer than two years as against 33 (3%) of the others, but this did not reach statistical significance. For those with a total length of stay less than two years there was no significant difference in median length of stay between absconders and controls.

### Characteristics of 'first incidents'

There were no significant sex differences. Nine patients absconded within three days of admission; a total of 12 within the first week, and within two weeks a total of 20 patients (50%) had left the hospital. Nine patients (23%) were in hospital for eight weeks or more before absconding.

The time of abscondence is difficult to interpret because of the tendency to log incidents at the end of each nursing shift, but wherever possible the time the patient was last observed on the ward was taken as the time of abscondence. There was no diurnal variation. Of interest is that only five patients (13%) left during the night shift and all of them before midnight. Relatively few patients absconded during the main nursing handover. Only six patients absconded from a ward other than their ward of admission. Seventeen incidents were from the two 'disturbed' wards as against 23 incidents evenly distributed between the remaining 14 wards.

The incident form allows for noting risk of suicide, behaving dangerously, or suffering by neglect. Of the first-time absconders, 13 (33%) had no special risk recorded (although five of these incidents were reported to the police). This suggests the staff were significantly concerned about the remaining 27 patients. Fifteen patients were held to be at risk of suicide, and yet four such incidents were not reported to the police; 12 were thought likely to suffer by neglect (and only three were reported), and six patients were considered to be dangerous (one was not reported to the police). Some patients were considered to be multiple risks.

Thus a total of 24 incidents (60%) were reported to the police. These included all except one of the detained patients, and eight of only 11 patients who had a precipitant recorded in the nursing notes, of whom six were held to be 'angry', three 'upset', and two suicidal. In 11 (28%) first incidents no special action was taken (relatives and the nursing officers were informed as a matter of course).

### Outcome

Eight absconders (20%) failed to return. Two were women, one of whom went on to have further treatment as an out-patient and the other fell from a nearby railway bridge and died. An open verdict was returned at inquest, although she was diagnosed as depressed and recorded as being at risk of suicide. Of the six men, two had an unknown outcome at one year, one went on to further treatment as an out-patient, and one returned to his parents' home in Surrey. Two patients were subsequently arrested for public order offences, one in Bristol, the other in London. Neither had been considered to be at special risk and the police had not been informed.

Of the 32 returnees, 13 returned within three hours, a further eight within six hours and another three within 12 hours; i.e. 75% returned within 12 hours. Only two patients (6%) remained at large for over 24 hours before returning.

The commonest destination of absconders was the immediate environs of the hospital ($n=11$). Nine (28%) went home and three (9%) returned from an unknown destination. The other nine returned from various locations in and around the city. Those returning from local environs were back within three hours in all but two cases.

Nine patients returned of their own accord, nine were brought back by the police, and the remainder returned with family, nursing staff, ambulance service, etc. There was no correlation with other variables. Only three returnees had their legal status changed immediately after their abscondence, all from informal to detained. (One patient had previously been detained but the order had lapsed.)

### Characteristics of repeaters

Thirteen patients absconded on more than one occasion, including the five who were in-patients on two separate occasions during the year. Six were men and seven were women. The frequency of absconding ranged from 2 to 17 incidents. Six patients absconded on more than three occasions. Overall there were 55 second or subsequent incidents. Comparing this group with the other absconders yielded no statistically significant differences on the variables studied, although the repeaters were more likely to be formal patients (six compared with six in the first-time group), and to have longer total lengths of stay – five were in-patients for more than two years compared with three in the original group.

Profiles of each incident showed no particular *modus operandi* for each individual, except with respect to the point of recovery, i.e. those who returned from home tended always to go home rather than go elsewhere or stay within the hospital environs.

Precipitants were not often recorded. The police were informed in 75% of incidents, compared with 60% in the original group; this was invariably done if the patient was detained. There was no change in the pattern of recording 'risk' features, despite a long history of 'safe' incidents.

One man failed to return on one occasion, only to be readmitted subsequently. Absence for longer than 24 hours occurred in 13 incidents as against two in the original group. The police were involved more often in returning the patients (36.1% compared with 28.1%). There were no significant sex differences.

## Discussion

Absence without leave, as defined in this study, accounts for only a proportion of those patients who leave hospital treatment prematurely. The significant findings – that absence without leave is associated with a predominantly male population, younger age, compulsory admission, and a diagnosis of schizophrenia, plus the trends toward more previous admissions, a longer total length of stay, and single status – support previous studies from the UK (Muller, 1962; Antebi, 1967) and the USA (Altman *et al*, 1972). Similarly, the finding of absconding early in hospital stay and the generally brief absence confirms the work of Muller (1962) and Antebi (1967).

Interestingly, the high rate of absconding by patients with schizophrenia was largely accounted for by women. Absconding men showed less diagnostic specificity, although they tended to be psychotic.

In contrast to Muller (1962), patients who were AWOL were more often those with a longer length of stay, and there was no seasonal variation. Previously unreported findings include a strong trend towards more police involvement around admission compared with controls. Involvement of the police often occurs after each incident, regardless of whether the patient is detained or not and of whether he has had a number of 'safe' incidents in the past. Because of the great variability in the standard of reporting, it would be unwise to draw any strong conclusions, but the absence of a diurnal pattern, the few incidents during night shift (when staffing levels drop), the notable absence of clustering of incidents on certain wards, and the paucity of patients who absconded during nursing handover, suggest that the level of supervision and ward milieu are not critical factors in determining abscondence. The 'disturbed' wards yielded most absconders, but had better staffing and supervision.

The circumstances of each incident, the destination, length of absence, and percentage failing to return broadly confirm the findings of Muller (1962) and Antebi (1967). It might be expected that treatment with injections or ECT would precipitate absconding, but this does not appear to be the case. Only three patients (two men, one woman) were prescribed such treatment for the first time immediately before the incident. Further, absconding rarely results in formal detention (although a threat to leave is more likely to begin detention procedures).

The 'repeaters' gave rise to the greatest time commitment from the various professionals involved, but they have little in common on the variables studied. Their only common characteristics are higher level of police involvement in search and return, and the fact that they have an individually favoured destination.

Overall, AWOL, although common, involves relatively few patients, and the bulk of incidents arise because of repeaters. AWOL is difficult to predict on the criteria studied. The reasons for absconding are unclear and yet presumably relate to some dissatisfaction with the treatment process, which may in turn relate to the mode of admission. Personal knowledge of the absconders suggests that this group is more often involved in other disruptive behaviour (violence, poor treatment compliance, self-harm etc.), although this is purely a subjective impression. Dissatisfaction with hospital environment and staff attitude is unusual in hospitalised psychiatric patients (Weinstein, 1981), which raises the possibility that the study population will share certain personality characteristics or attitudes to treatment, but this needs further research.

In terms of practical management, there is a clear need for better recording of incidents and for more selective reporting of incidents to the police. In view of the rate of early return from the hospital environs, it is probably worth conducting a search of the locality before informing the police and, in the case of repeaters, first looking in the area of their favoured destination. In the light of this and the high rate of non-return, with subsequent risks of suicide and violence, it behoves hospitals to review their reporting policies for prevention of abscondence. Young, male psychotics and schizophrenic or personality disordered females compulsorily admitted with police involvement should be considered as being at high risk of absconding.

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# Dexamethasone Suppression Test in Dementia and Depression
## Clinical and Biological Correlates

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To determine the usefulness of the DST in differentiating depression from dementia, the test was administered to three diagnostic groups of psychogeriatric patients: depression; dementia; and dementia with depression. Clinical assessments were supplemented by ratings on the HRSD and SCAG, as well as by EEG and CT. All three groups showed a high incidence of abnormal DST results unrelated to presence or severity of affective symptoms, but showing a better association with SCAG and its 'organic' subsets. The mechanism(s) underlying these abnormal results may reflect organic brain disease. The usefulness of the DST in differentiating depression from dementia in the elderly was not confirmed.

Characteristic disturbances of mood, both in the early and intermediate phases of dementing illness, have been well documented (Slater & Roth, 1969; Sim, 1985). Post (1962) has drawn attention to the frequency with which organic impairment is associated with deep and apparently genuine depression, and more recent studies have confirmed that over half of the dementing patients manifest overt and clinically significant depressive symptoms. In one study (O'Neal *et al*, 1956), over 50% of patients aged 60 or over who had attempted suicide suffered from chronic or acute organic brain syndromes.

Many elderly patients with depression present with atypical features, for instance the syndrome of pseudodementia, in which depressed patients show profound cognitive impairment (Post, 1975; Wells, 1979). It is, therefore, not surprising that diagnostic difficulties frequently arise in differentiating depression from dementia in the elderly. Marsden & Harrison (1972), investigating 106 patients originally diagnosed as suffering from dementia, found depression to be responsible for the clinical picture in eight patients and mania in one. A higher proportion of misdiagnoses (64%) was found by Nott & Fleminger (1975) in a ten-year follow-up of a selected group of 35 patients, originally with a diagnosis of pre-senile dementia. Cognitive impairment secondary to depression (Folstein & McHugh, 1978) may also accentuate intellectual deterioration and increase both the degree of handicap (Greenwald *et al*, 1986) and diagnostic confusion.

Neuroendocrine abnormalities have been shown to accompany affective states. Although the precise nature of these is poorly understood, the non-suppression of the hypothalamus–pituitary–adrenal system after dexamethasone administration has been reported to have a high specificity for endogenous depression (Carroll *et al*, 1981; Carroll, 1982). Many subsequent studies have confirmed that depressed patients have a higher incidence of abnormal responses to the dexamethasone suppression test (DST), although the observation that similar abnormalities have been reported in other psychiatric disorders (Berger *et al*, 1984) throws doubt on the diagnostic value of this test.

There is little information about the significance of DST in either the depressed elderly or in dementing illness. Recent studies have reported conflicting results. Some authors have found DST to be significantly related to the severity of affective symptoms, and have ascribed to it a diagnostic importance (McAllister *et al*, 1982; Carnes *et al*, 1983; Greenwald *et al*, 1986; Georgotas *et al*, 1986), whereas others have found no relationship and have doubted its clinical significance (Spar & Gerner, 1982; Balldin *et al*, 1983; McKeith, 1984). A few reports have indicated that demented patients suffering depression may be more likely to have DST non-suppression than those without (Katona & Aldridge, 1985; Abou-Saleh *et al*, 1987). The observation that a high proportion of demented patients have clinical evidence of depression and an equally large number of them have a positive DST would suggest that the two may, in fact, be related in some way.

The present study was undertaken to evaluate systematically the clinical usefulness of DST as an aid to diagnosing depressive disorders in the elderly, and more specifically to investigate whether it helped in the differential diagnosis between depression and dementia. A secondary objective was to determine the clinical and biological correlates of abnormal DST findings in this age group.

## Method

### Patient sample

All patients in the study were in-patients at Prestwich Hospital. They were of both sexes and aged 65 years or over. At the start of the study, a detailed clinical assessment and relevant laboratory investigations were carried out. Patients with significant physical illness, respiratory or cardiovascular disease, or endocrine disorder, or those with significant laboratory abnormalities, and patients on drug therapy with barbiturates, steroids, or anticonvulsants were excluded from the study. All treatments including antidepressants were withheld until the DST and assessments had been completed. If any patient had been on psychotropics, these were stopped for seven days before assessment. Based on DSM-III criteria (American Psychiatric Association, 1980), patients were allocated to three groups.

Group 1 (depression) – 13 patients with a diagnosis of major depression and no clinical evidence of cognitive dysfunction.

Group 2 (dementia) – 25 patients with an established diagnosis of primary degenerative dementia (Alzheimer type) but showing no abnormalities of affect. Clinical evidence suggesting multi-infarct dementia excluded the patient from the study.

Group 3 (dementia with depression) – 12 patients with an established diagnosis of dementia and prominent affective symptoms indicating clinically significant depression.

Although a total score of at least 18 on the Hamilton Rating Scale for Depression (HRSD) (Hamilton, 1967) was essential to qualify for the diagnosis of depression in both depression groups, three patients in group 3 had a score of 17 but were included in the study (range 18–28 and 17–20 for groups 1 and 3 respectively). A total score of at least 35 on the Sandoz Clinical Assessment-Geiratric Scale (SCAG) (Shader, 1974) was required for clinically significant dementia; in the event, all patients in the two dementia groups had scores well above this figure (range 43–107).

The mean ages of the patients in the two dementia groups were comparable (Table I), but differed significantly from the depression group (analysis of variance (ANOVA): d.f. = 2; $P = 0.004$), and the women were significantly older than the men ($t$-test, $P = 0.02$). There were more women than men in all three groups, but the sex differences between groups were not significant ($\chi^2$: d.f. = 2; $P = 0.07$). Most patients were long-stay residents in the hospital, although eight depressed patients were acute admissions; there were significantly more women, proportionately, in the long-stay group. Seven of the 13 depressed patients had a previous history of similar illness. The body weights of the patients in the three groups were comparable (ANOVA: d.f. = 2; $P = 0.12$).

### Assessment scales

The HRSD was administered and the 18 items rated were subsequently grouped into four categories: depressive mood; biological function, such as appetite, sleep and weight disturbance; anxiety/agitation; and social withdrawal, including psychomotor retardation. The SCAG was employed for characterising symptoms of dementia. Nineteen items were rated and grouped into five categories relating to confusion, memory, mood, physical symptoms, and self-care. Both these scales have been validated in psychogeriatric patients (Hamilton, 1967; Shader, 1974). The subscales of SCAG were adapted from those developed by Venn (1983); those for the HRSD were developed in Salford to categorise depressive symptoms for this study. The ratings on each of these scales were initially standardised by regular inter-rater reliability sessions, which were repeated during the course of the study to prevent any drift in rating practices.

TABLE I
*DST in dementia and depression (demographic data)*

| | *Group 1 (depression)* | *Group 2 (dementia)* | *Group 3 (dementia + depression)* |
|---|---|---|---|
| Sample (*n*) | 13 | 25 | 12 |
| Age in years: mean ± s.d. | 72.2 ± 6.2 | 79.2 ± 7.5 | 80.9 ± 5.4 |
| Sex | | | |
| Male | 6 | 10 | 3 |
| Female | 7 | 15 | 9 |
| Type of ward | | | |
| Long-stay | 5 | 21 | 11 |
| Short-stay | 8 | 4 | 1 |
| DST | | | |
| Positive | 7 | 11 | 7 |
| Negative | 6 | 14 | 5 |

### DST

DST was performed on all patients according to the procedure recommended by Carroll *et al* (1981). Dexamethasone (1 mg) was administered at 11 p.m., and on the next day blood samples were collected at 4 p.m. and 11 p.m. Serum cortisol was assayed by radio-immunoassay, as described by Beckett *et al* (1982), using antiserum supplied by the Scottish Antibody Production Unit, which had a cross-reactivity with dexamethasone of less than 0.4%. The assay was standardised in the laboratory, and showed a within-batch variation of 6.9%, and a between-batch variation of 7.4%; both were considered acceptable for clinical use. The laboratory staff assaying the samples were blind to the clinical diagnosis, and the results were not released to the clinicians until all diagnostic assessments were completed. A post-dexamethasone level of 140 nmol/l was used as the cut-off point to distinguish DST-positive from DST-negative patients; although this was the laboratory recommendation based on non-psychiatric patients, no validation was undertaken for psychiatric patients in this study.

### EEG and CT

A standard 16-channel electroencephalogram (EEG), performed on all patients at entry into study, included records during rest, provocation with visual strobe, and drowsiness. In some cases of dementia, visually evoked responses were also recorded. Computerised tomography (CT) was performed in some patients with dementia (groups 2 and 3).

### Statistical analysis

ANOVA determined significance, and, if found, multiple independent sample $t$-tests were performed. For data that required non-parametric tests, $\chi^2$ was used. Finally, a discriminant function analysis was performed on the two groups for DST (positive and negative) to determine whether the factors studied showed any predictive value for the DST status.

## Results

### Clinical features

As expected, depressed patients (groups 1 and 3) had a significantly higher score on HRSD and on the mood subset of SCAG. The total HRSD score in these two groups was 20.2±4.3 and 19.0±2.7 respectively. By contrast, the SCAG score was higher in groups 2 and 3 (65.6±12.1 and 73.8±12.2 respectively); these groups also had slightly higher scores on the retardation subset of HRSD. Group-2 patients, however, differed from all others in having a much lower anxiety score on both scales. The scores on the confusion, memory and self-care subsets of SCAG were significantly higher in patients with dementia (groups 2 and 3).

### DST

All three groups of patients showed a high proportion of patients with a positive DST (Table II), and the differences between the groups were not significant ($\chi^2=0.77$, d.f.$=2$, $P=0.68$). DST status did not appear to be related to age ($t$-test, two-tailed; $P=0.13$) or sex ($\chi^2=0.11$, d.f.$=2$; $P=0.74$). ANOVA, followed by individual $t$-tests for various factors for the whole sample, showed that the presence or absence of depressive symptoms was not associated with a positive DST. In contrast, there appeared to be a significant relationship with the global as well as total SCAG score, but not at all with total HRSD score, and only slightly with the mood subset of this scale. Thus, the severity of depressive symptoms did not appear to predict dexamethasone non-suppression; however, the latter appeared to be associated with a high dementia score on the organic subsets of SCAG (confusion + memory), and this was so even after including age as a covariable (ANOVA, $P$ for main effects and covariate, 0.59 and 0.22 respectively).

Statistical analysis was also carried out on individual diagnostic groups. In group 1 (depression), DST status was found to be unrelated to all HRSD subsets except mood. In group 2 (dementia), positive DST was seen in a significantly higher number of patients with high total and global SCAG score, as well as its confusion, memory and self-care subsets, but on none of the HRSD subscores, indicating that organic factors were more important than the severity of mood change. In group 3 (dementia with depression), which overlapped the other two clinically, these findings were substantially confirmed: DST status was found to relate significantly with the total and global SCAG score and scores on mood subset of SCAG, but not with any of the subscores on HRSD (including mood). It is possible that if the sample sizes (particularly for groups 1 and 3) were larger, some significance for other subsets of HRSD may have emerged.

TABLE II
*DST status and clinical rating scores*

| | *DST positive* | *DST negative* | *DST positive* | *DST negative* | *DST positive* | *DST negative* |
|---|---|---|---|---|---|---|
| Sample size (*n*) | 6 | 7 | 14 | 11 | 5 | 7 |
| HRSD: mean±s.d. | | | | | | |
| Mood | 6.8±1.9 | 5.1±2.2* | 0.2±0.6 | 0.2±0.4 | 3.8±1.3 | 4.4±1.9 |
| Biological | 4.2±1.0 | 4.4±1.7 | 1.9±1.4 | 1.5±0.9 | 4.0±1.6 | 2.7±0.8 |
| Retardation | 5.8±0.9 | 6.1±0.9 | 4.3±1.3 | 5.0±1.5 | 7.2±1.5 | 7.7±1.1 |
| Anxiety/agitation | 4.2±2.6 | 4.0±1.4 | 0.6±0.8 | 0.8±0.9 | 3.6±1.5 | 4.6±1.4 |
| Total | 20.8±4.6 | 19.7±4.3 | 7.1±1.5 | 7.5±1.9 | 18.6±2.5 | 19.4±2.9 |
| SCAG: mean±s.d. | | | | | | |
| Confusion | 2.2±0.4 | 2.0±0.3 | 9.4±3.4 | 12.0±2.0* | 8.8±4.2 | 11.0±3.7 |
| Memory | 4.2±1.3 | 4.4±1.1 | 15.1±3.6 | 17.9±2.5* | 11.0±4.7 | 15.6±4.8 |
| Mood | 15.3±3.5 | 17.0±2.5 | 8.2±2.7 | 8.2±1.9 | 13.8±3.0 | 17.7±1.5** |
| Social | 9.7±2.1 | 10.0±2.5 | 13.5±3.0 | 15.6±4.5 | 14.6±8.1 | 21.0±6.6 |
| Self-care | 3.5±1.8 | 3.3±1.5 | 8.7±3.1 | 11.3±2.5* | 8.0±3.7 | 10.0±2.5 |
| Global | 2.2±2.6 | 2.9±0.7 | 4.4±1.2 | 5.7±0.8** | 3.8±0.8 | 5.3±1.0** |
| Total | 36.3±8.6 | 40.0±4.7 | 60.2±11.8 | 72.5±8.9*** | 59.2±18.5 | 84.3±19.1* |

***$P<0.001$; **$P<0.02$; *$P<0.05$.

TABLE III
*Post-dexamethasone serum cortisol level and clinical assessment scores*

| | *Group 1* | *Group 2* | *Group 3* | *Total* |
|---|---|---|---|---|
| HRSD | | | | |
| Mood | 0.26 | −0.10 | 0.29 | 0.22 |
| Total | 0.11 | 0.08 | 0.13 | 0.18 |
| SCAG | | | | |
| Mood | 0.54 | 0.12 | 0.39 | 0.31 |
| Memory | 0.16 | 0.46 | 0.43 | 0.07 |
| Confusion | 0.12 | 0.57* | 0.16 | 0.03 |
| Global | 0.52 | 0.48* | 0.49 | 0.22 |
| Total | 0.34 | 0.60* | 0.34 | 0.21 |

All values are Pearson's *r*.
*$P<0.01$.

Correlational statistics were performed to study relationships between post-dexamethasone serum cortisol levels and various clinical and demographic variables, both for the sample as a whole and for each diagnostic group (Table III). No significant correlation was detected for total HRSD, or its mood or any other subset. The only statistically significant correlation that emerged was for the confusion subset of SCAG and the global and total SCAG scores in group-2 patients.

*Discriminant function analyses* were carried out on groups defined by DST status, for demographic and clinical factors, to supplement the above analyses. The findings were substantially similar. For the various clinical parameters used in clinical assessment at initial interviews, the classification function coefficients were highest for global and total SCAG scores, confusion score, sex, and diagnosis, but were low for all subsets of HRSD; the group membership could be predicted correctly at a level of 80% for DST-negative and 92% for DST-positive patients.

### EEG and CT

EEG recordings showed a significantly higher incidence of abnormalities in most patients with dementia and many with depression. Generalised abnormalities in the form of theta and delta activity were the commonest form of abnormality, although focal changes were also observed in seven patients. Neither the severity of generalised abnormalities nor the presence or absence of focal changes correlated with the DST status, even though there was a significantly higher incidence of EEG abnormalities in patients with dementia (groups 2 and 3). Evidence of ventricular dilatation and cortical atrophy on CT was seen in 8 (61%) of the patients with dementia who had the investigation ($n=13$), but did not correlate with the DST status. Seven of these patients also had focal abnormalities; three had a positive DST.

## Discussion

It is well known that distinction between depression and dementia is clinically difficult, although they frequently coexist. The effect of age on DST is unclear: many studies have reported a high correlation between advancing age and a positive DST (Dilman *et al*, 1979; Oxenkrug *et al*, 1983; Branconnier *et al*, 1984; Katona & Aldridge 1985; Georgotas *et al*, 1986; Abou-Saleh *et al*, 1987), while others have been unable to find any significant effect (Tourigny-Rivard *et al*, 1981). Our own observations suggest that, in the sample studied, age was not an important factor in determining DST status. It is true that the patients in our study were more severely demented than those previously reported, and this could have influenced the results.

Many authors have indicated the usefulness of DST in the elderly depressed; this appeared to be true only in our patients with depression without dementia. It has been suggested that it can be used not only to help differentiate depression from other disorders, especially dementia (Spar & Gerner, 1982; Raskind *et al*, 1982; Carnes *et al*, 1983; Greenwald *et al*, 1986) and pseudodementia (Rudorfer & Clayton, 1982; McAllister *et al*, 1982), but that it may also have a value in prognosticating clinical response to treatment. Others, however, have been unable to confirm these findings. Balldin *et al* (1983) found a high incidence of positive DST results in his sample of patients with different types of dementias, making it difficult to ascribe to it any clinical diagnostic significance. Similar observations were reported by McKeith (1984), who concluded that the DST, although useful in diagnosing endogenous depression, was not helpful in differentiating the latter from dementia. Our findings are in line with these observations. It was significant that the groups of patients studied showed a similar incidence of positive DST results, considerably reducing the value of this test in helping to differentiate the two clinical states. The claim that a positive DST result in dementia may indicate atypical depression (Coppen *et al*, 1983) has not been confirmed by our own studies (Shrimankar *et al*, 1988).

Another interesting observation in our study was that, contrary to expectations, the scores on HRSD or on any of its subsets did not correlate with the DST status for the total sample (nor individually for groups 2 and 3), even after the influence of age had been taken into account in statistical analysis. Similar lack of association was observed for the mood subset of SCAG scale. In fact, the only significant relationships observed for DST status were with the 'organic' subsets of SCAG, such as memory, confusion, and self-care, and also with the global and total SCAG scores. The conclusion from this must be that the organicity in dementia, and perhaps the elderly in general, is responsible for the DST abnormalities in psychogeriatric populations repeatedly reported in the literature.

The nature of mechanisms underlying these observations are more difficult to determine. They could either be a function of coarse neuronal disease of a generalised or focal nature, or a result of functional abnormalities in the various transmitter systems in the hypothalamic areas. Neuropathological studies in patients with dementia have revealed changes in many different parts of the brain, including the cortex (Pearson *et al*, 1985), hippocampus (Mann *et al*, 1985), basal ganglia (Sulkava *et al*, 1983) and the locus coerulus (Mann *et al*, 1980). In association with this pathological change, alterations in the cytoplasmic RNA have been demonstrated (Mann *et al*, 1980), as well as in the neurotransmitter systems such as cholinergic (Bowen *et al*, 1976; Perry *et al*, 1977), serotonergic (Mann & Yates, 1983), dopaminergic (Bowen *et al*, 1974; Reisine *et al*, 1978) and noradrenergic systems (Mann *et al*, 1980). The finding of reduced noradrenergic activity in locus coerulus (Bondareff *et al*, 1981) and hypothalamus (Mann *et al*, 1980; Yates *et al*, 1981) in dementing patients has prompted some authors to propose that this deficiency may result in disinhibition of the release of corticotrophin releasing factor, which could explain the high incidence of abnormal DST findings in dementia.

Our study has shown that the severity of clinical dementia, as measured by the various parameters on the SCAG scale, showed a high association with DST abnormality; this was confirmed by the multiple statistical analyses. We feel that the coarse pathological changes and their extent and distribution are relevant to these abnormal findings. It is reasonable to assume that these structural abnormalities may also result in alterations in neurotransmitter pathways, paving the way for a multitude of abnormalities of which DST non-suppression is one.

In conclusion, the study has convincingly demonstrated that a high proportion of patients with dementia, with or without depressive symptoms, have an abnormal cortisol response to dexamethasone. Although in depression the DST may be useful for diagnosis, it appears to have only limited value in the elderly, and especially when used to distinguish depression from various dementing disorders. The non-specificity of a positive DST result in psychogeriatric patients makes it unsuitable as a diagnostic tool for routine clinical use.

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# PROQSY: a Computerised Technique for Psychiatric Case Identification in General Practice

GREG WILKINSON and A. C. MARKUS

Two-stage screening for minor psychiatric morbidity was carried out with a consecutive sample of 256 patients aged 15–69 consulting an experienced GP in a semirural setting over a seven-week period. Patients completed a short GHQ, and the GP made a standardised assessment of the reason for consultation and the degree of psychological disorder. A 40% random subsample were evaluated using PROQSY, a newly developed computerised psychiatric assessment based on the CIS. PROQSY is acceptable to patients in general practice, and yields an estimate of the prevalence of minor psychiatric morbidity (33%), and validity indices for the 12-item, 28-item, and 30-item GHQs, comparable with those found in similar studies, when the CIS has been administered by an interviewer. PROQSY may be recommended as a research tool, providing a criterion measure of minor psychiatric morbidity in general practice, where it may reduce time and manpower, and eliminate interviewer bias.

Two-stage screening for minor psychiatric morbidity in general practice using the General Health Questionnaire (GHQ) (Goldberg, 1972) as a first-stage screening instrument and the Clinical Interview Schedule (CIS) (Goldberg *et al*, 1970*a*) as a second-stage criterion measure has become established (Goldberg & Blackwell, 1970*b*; Goldberg, 1978; Skuse & Williams, 1978; Skuse & Williams, 1984; Wright & Perini, 1987; Goldberg & Williams, 1988).

This report is based on the above technique, and documents the use of PROQSY, a newly developed computerised version of the CIS (Lewis *et al*, 1988), as a criterion measure of minor psychiatric morbidity in a semirural general-practice setting. Relative Operating Characteristic (ROC) analysis was used to compare the validity of the screening instruments and the GP's assessments. In addition, patients' views on the use of PROQSY were elicited using a brief standardised interview.

## Method

### Setting

The survey took place at a modern, purpose-built health centre in Thame, an Oxfordshire market town, where the population has risen over the past 20 years from 5000 to 10 000. The environment is semirural. Over 10 000 patients from Thame and its surrounding villages are registered with the practice, which has been in existence for over 30 years. There are six GP partners, and one trainee GP. A.C.M. is one of the senior partners. The practice operates a 10-minute appointments system, and patients may consult with the doctor of their choice, subject to availability.

### Procedure

*First stage.* Over a six-week period, all consecutive patients registered with the practice and consulting the GP were asked to complete a short form of the GHQ (Goldberg, 1972), which comprised the items contained in the 28-item and 30-item versions of the GHQ (thus including the 12-item GHQ), while awaiting their appointment with the doctor.

After each consultation, the GP, who was blind to GHQ scores, made a standardised assessment of the patient's reason for consultation and the degree of psychological problem present.

*Second stage.* A 40% random subsample of patients were selected for assessment using PROQSY. PROQSY scores were calculated as for the CIS, by summing individual symptom scores. A cut-off score of 9/10 using PROQSY was chosen in advance as the optimum for case/non-case discrimination, on the basis of validity studies comparing PROQSY with the CIS (Lewis *et al*, 1988).

PROQSY was administered in a quiet, open area of the health centre, beside a window but out of sight of other consulters and staff. An IBM-compatible microcomputer with a standard keyboard and monochrome screen was used. Patients were seated comfortably and G.W. waited with them until they had completed the instructions section and the first question ("How old are you?"). Thereafter GW returned occasionally to ask if there were any difficulties. The nature of the survey and the computerised assessment was discussed with patients after the procedure was completed.

### Validity of PROQSY

Lewis *et al* (1988) have shown that in both primary and secondary health care settings there is good agreement between PROQSY assessments and those of the CIS administered by psychiatrists, both in assessing overall severity and in defining 'cases' of psychiatric disorder.

In addition, when individual symptoms elicited by PROQSY and the CIS were compared, the levels of agreement found were similar to those found from interobserver studies of standardised interviews.

### ROC analysis

The application of ROC analysis (Swets, 1964; Egan, 1975) to studies of this kind has been found to be feasible and straightforward, and superior to the conventional method of presentation of validity data (Mari & Williams, 1985).

The most useful summary index of the discriminating ability of an instrument is the area under the ROC curve (Swets, 1979), which represents the probability that a random pair of normal and abnormal subjects will be correctly rated as regards their disease state (Hanley & McNeil, 1982). This index varies from 0.5 for a screening test whose ability to discriminate between 'cases' and 'non-cases' is no better than chance, to 1.0 for a test with perfect discrimination. A method of comparing the areas under ROC curves derived from the same sample has been described by Hanley & McNeil (1983). A computer program for ROC analysis has been developed by Dorfman & Alf (1969) to estimate indices of accuracy, and has been modified by Metz *et al* (1984) to estimate parameters for the fitted ROC curve.

### Patients' views on the use of PROQSY

To ascertain patients' views on the use of PROQSY, 50 consecutive patients were questioned immediately after completing the PROQSY assessment. The interview was structured and responses were classified on four-point Likert scales. In addition, a record was made of respondents' spontaneous comments about their experience of using PROQSY. A further 33 consecutive patients were asked whether, in retrospect, it was easier to disclose answers to questions about emotional symptoms to their doctor or to PROQSY.

## Results

### Characteristics of the sample

A total of 256 consulters (152 males and 104 females) were eligible to take part in the survey. One male and one female did not complete the first-stage questionnaires: thus the response rate in the first stage was 99.2%. The mean ages of the male and female participants were 39.1 years (s.d. 15.6; range 15–69) and 36.3 years (s.d. 13.7; range 15–66). Of the 100 first-stage participants (54 male and 46 female) randomly selected for assessment using PROQSY, four men and two women did not take part in the second stage: thus the response rate in the second stage was 94%. The males and females completed PROQSY in a mean of 15.4 min (s.d. 4.1; range 7–25) and 18 min (s.d. 6.3; range 12–35). No person who began the assessment stopped before it was completed.

### General practitioner's assessments

The GP completed assessments on all participants. Reason for consultation was classified by the GP as follows:

| | | |
|---|---|---|
| Entirely physical problem | 158 | (62%) |
| Primary physical problem; associated psychological problem | 27 | (11%) |
| Primary psychological problem; associated physical problem | 10 | (4%) |
| Unrelated physical and psychological problems | 51 | (20%) |
| Entirely psychological problem | 5 | (2%) |
| No problem, miscellaneous, unclassifiable | 3 | (1%) |

TABLE I
*GP's assessment of degree of psychological problem*

| *Psychological problem* | *Male* | *Female* | *Total* | *12-item GHQ* | | *28-item GHQ* | | *30-item GHQ* | | *PROQSY* | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | *0–1* | *2+* | *0–3* | *4+* | *0–2* | *3+* | *0–9* | *10+* |
| Nil | 91 | 57 | 148 | 120 | 28 | 109 | 39 | 116 | 32 | 33 | 7 |
| Mild – not influencing management at present | 26 | 14 | 40 | 30 | 10 | 28 | 12 | 28 | 12 | 9 | 4 |
| Mild – influencing management at present | 12 | 16 | 28 | 12 | 16 | 11 | 17 | 10 | 18 | 3 | 5 |
| Moderate – not influencing management at present | 10 | 5 | 15 | 9 | 6 | 5 | 10 | 7 | 8 | 4 | 3 |
| Moderate – influencing management at present | 11 | 11 | 22 | 4 | 18 | 4 | 18 | 4 | 18 | 1 | 3 |
| Severe – not influencing management at present | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Severe – influencing management at present | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| Totals | 151 | 103 | 254 | 175 | 79 | 158 | 96 | 165 | 89 | 50 | 23 |

TABLE II
*Cross-tabulation of reason for consultation with degree of psychological problem*

| *Reason for consultation* | *Degree of psychological problem* | | | | |
|---|---|---|---|---|---|
| | *Nil* | | *Mild or greater* | | *Total* |
| Entirely physical | 146 | 91 M<br>55 F | 2 | 0 M<br>2 F | 148 |
| Physical and psycho-logical | 15 | 7 M<br>8 F | 91 | 53 M<br>38 F | 106 |
| Totals | 161 | | 93 | | 254 |

$\chi^2 = 186.4$ (total); 120.0 (males); 63.8 (females); all d.f. = 1; all $P < 0.001$.

TABLE III
*Areas under ROC curves*

| | *Total* Mean | s.d. | *Male* Mean | s.d. | *Female* Mean | s.d. |
|---|---|---|---|---|---|---|
| 12-item GHQ | 0.84 | (0.07) | 0.77 | (0.11) | 0.91 | (0.07) |
| 28-item GHQ | 0.89 | (0.04) | 0.92 | (0.05) | 0.88 | (0.07) |
| 30-item GHQ | 0.89 | (0.05) | 0.86 | (0.07) | 0.90 | (0.07) |
| GP assessment | 0.74 | (0.07) | 0.70 | (0.11) | 0.79 | (0.09) |

Although conditions classified as entirely psychological problems were uncommon, some degree of psychological problem coexisted with a physical problem in 37% of the sample. There was no association between sex and the reason for consultation.

Table I shows the GP's classification of the degree of psychological problem present. The GP rated 42% (106/254) of the sample as having at least a mild degree of psychological problem. There was no association between sex and degree of psychological problem.

Table II shows reason for consultation (categorised as either entirely physical, or physical and psychological) cross-tabulated with degree of psychological problem (categorised as nil, or mild and greater), and that there were highly significant positive associations between these variables overall and for both sexes. Thus, patients whose consultations were categorised as for physical and/or psychological problems tended to be categorised as having mild or greater degree of psychological problem.

### Validity of the GHQ and GP assessments using ROC analysis

ROC analysis was restricted to the 40% random subsample selected for the second stage of the survey. The areas under the ROC curves are shown in Table III and Fig. 1. Curves were obtained for GHQ and GP's assessments completed on the day of the consultation and within seven days of consultation. These sets of curves were very similar, so only data from those assessments completed on the day of consultation ($n = 73$) are shown here.

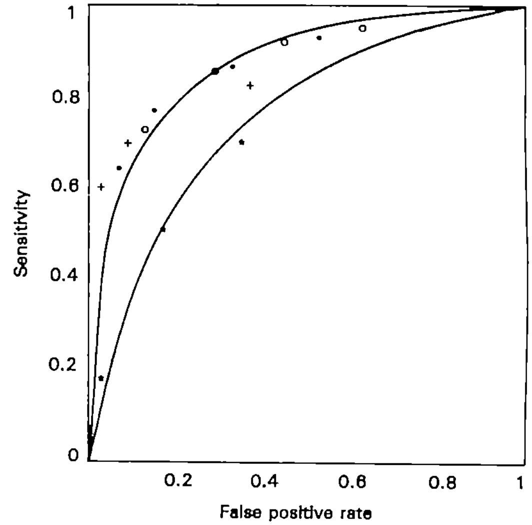

FIG. 1 A comparison between ROC curves for the 28-item (o) and 30 (item (°) GHQs and the GP's assessments (•). Co-ordinates for the 12-item (+) GHQ are also shown.

The GHQ uniformly has higher area values than the GP's assessments, but the areas under the ROC curves were not statistically significantly different from each other – using a method of comparing the areas under ROC curves derived from the same cases (Hanley & McNeil, 1983).

### Optimum cut-off scores from ROC curves

The optimum cut-off points for the 12-item, 28-item, and 30-item GHQs and the GP's assessments were 1/2, 3/4, 2/3, and 0/1, respectively, with false positive and false negative misclassifications being regarded as of equal weight.

### Estimated validity coefficients of the GHQ and GP assessments

Using these cut-off scores, validity coefficients were calculated for the sample (Diamond & Lillienfeld, 1962) (Table IV). As can be seen, validity coefficients from the GHQ data were similar but generally superior to those for the GP's assessments.

### Estimated prevalence of psychiatric morbidity

Table V shows the expected distribution of psychiatric morbidity in the sample calculated according to the method suggested by Skuse & Williams (1984) using figures obtained from the 30-item GHQ and with the cut-off scores for the GHQ and PROQSY quoted above. The estimated prevalence of psychiatric morbidity was thus 33% (82.91/254) (95% confidence interval 27–39%). Using the same method, it was 32% in males and 34% in females).

TABLE IV
*Validity coefficients of the 12-item, 28-item, and 30-item GHQ and GP assessments*

| | *12-item GHQ* | | | *28-item GHQ* | | | *30-item GHQ* | | | *GP* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Total* | *Male* | *Female* | *Total* | *Male* | *Female* | *Total* | *Male* | *Female* | *Total* | *Male* | *Female* |
| Sensitivity | 75 | 73 | 80 | 86 | 88 | 88 | 78 | 75 | 83 | 71 | 71 | 71 |
| Specificity | 91 | 90 | 91 | 81 | 86 | 78 | 86 | 83 | 89 | 73 | 75 | 69 |
| Positive predictive value | 80 | 78 | 81 | 65 | 42 | 58 | 73 | 67 | 81 | 56 | 56 | 54 |
| Negative predictive value | 88 | 87 | 91 | 93 | 90 | 95 | 89 | 88 | 91 | 84 | 85 | 82 |
| Overall misclassification | 15 | 16 | 12 | 17 | 40 | 20 | 17 | 19 | 12 | 28 | 27 | 30 |
| Kappa | 0.67 | 0.63 | 0.72 | 0.61 | 0.27 | 0.56 | 0.63 | 0.56 | 0.73 | 0.41 | 0.42 | 0.37 |

TABLE V
*Estimated prevalence of psychiatric morbidity*

| | *Subsample assessed using PROQSY (n = 73)* | | | *Total sample (n = 254)* | | |
|---|---|---|---|---|---|---|
| | *Number* | *PROQSY +ve* | | *Number* | *Estimated psychiatric cases* | |
| | | *Number* | *Proportion (p)* | | *Proportion (p)* | *Number* |
| GP -ve; GHQ -ve | 30 | 2 | 0.07 | 116 | 0.07 | 7.73 |
| GP -ve; GHQ +ve | 10 | 5 | 0.5 | 32 | 0.5 | 16 |
| GP +ve; GHQ −ve | 19 | 4 | 0.21 | 49 | 0.21 | 10.32 |
| GP +ve; GHQ +ve | 14 | 12 | 0.86 | 57 | 0.86 | 48.86 |
| Totals | 73 | 23 | — | 254 | — | 82.91 |

### Patients' opinions about the use of PROQSY

The 25 males and 25 females interviewed agreed that the on-screen instructions for the use of PROQSY were easy to understand (41 "very easy" and 9 "fairly easy") and that PROQSY was easy to complete (28 "very easy" and 22 "fairly easy"). All thought that they had given an accurate description of themselves using PROQSY (14 "very accurate" and 36 "fairly accurate"): several respondents suggested that there was a need for a greater number of response categories in PROQSY and that they would have liked to qualify some of their responses; others stressed that their circumstances were unusual at the time of the PROQSY assessment, and this affected the accuracy of their descriptions. All thought that PROQSY was acceptable for routine use in the health centre (36 "very acceptable" and 14 "fairly acceptable"): several commented that it was a welcome development. There was no statistical association between the respondents' assessments of the accuracy or acceptability of PROQSY and sex or their PROQSY scores.

A further 33 consecutive patients (20 males and 13 females) were interviewed (by GW) immediately after completing the PROQSY assessment, again using a standardised interview. They were asked whether, in retrospect, it was easier to disclose their answers to their doctor or to PROQSY. First, under the condition that they had a satisfactory relationship with their doctor: 46% indicated their doctor; 36% were indifferent between the two; and 18% indicated PROQSY. Secondly, under the condition that they did not have a satisfactory relationship with their doctor: 18% indicated their doctor; 9% were indifferent between the two; and 73% indicated PROQSY.

## Discussion

This two-stage screening survey documents the use of PROQSY as a criterion measure of minor psychiatric morbidity in general practice. It also appears to be the first validity study of the GHQ from a semirural British general practice setting. The results observed show similar validity indices for the 12-item, 28-item, and 30-item GHQs, and their general superiority to standardised GP assessments.

The GP's assessment of reason for consultation was broadly similar to those reported in previous British studies (Goldberg & Blackwell, 1970*b*; Skuse & Williams, 1984; Wright & Perini, 1987). This was also true as regards his assessment of degree of psychological problem, and it is notable that the 42% rated as having a mild or greater degree of psychological problem corresponds exactly to the percentage assessed as having subclinical or greater degree of psychiatric disorder in the study conducted by Skuse & Williams (1984).

The validity indices calculated for the GP were substantial, though generally inferior to those of the different versions of the GHQ. In comparison to the figures for 'identification index' and 'accuracy' quoted by Marks *et al* (1979) for 91 Manchester GPs using the 60-item GHQ, the GP here had a higher sensitivity and an equivalent 'accuracy'. Taken together, these findings suggest that this GP has an ability to detect minor psychiatric morbidity which is comparable to that reported for other GPs, so supporting the generalisability of this work.

PROQSY was acceptable for use in this setting. In all, 197 computerised assessments were carried out during office hours over a seven-week period. None of the patients who refused to take part in the study indicated that this was on account of PROQSY. Indeed, patients had few difficulties with PROQSY. However, three participants required some help keying in their responses: one man with severe depression who said that he would be unable to complete the interview unaided; a male with a spastic paralysis; and an obsessional woman who was taking an excessive time deciding about which response to give and then to key it in.

ROC analysis has been used already in a few studies employing the GHQ (Mari & Williams, 1985; Bridges & Goldberg, 1986; Bellantuono *et al*, 1987; Surtees, 1987). The areas under the ROC curves obtained here closely resemble the values obtained in these other conventional studies. Differences between the three versions of the GHQ in area under the ROC curve or in other validity indices were marginal. Overall, our results confirm the observation that all applications of ROC analysis to the GHQ have given values for the area under the curve of greater than 0.80 (Goldberg & Williams, 1988).

The GP identified 42% of the sample as having at least a mild psychological problem; the different versions of the GHQ identified 31–38% as being probable psychiatric cases; and the estimated prevalence of psychiatric disorder based on PROQSY was 33%. This may be compared to Skuse & Williams' (1984) finding of an estimated prevalence of 34%, using conventional methods in a study conducted with a principal general practitioner in an outer-London practice. As has been found in conventional studies, the GP and GHQ tended to overidentify psychiatric disorder as measured by this technique.

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# The Question of Therapists' Differential Effectiveness
## A Sheffield Psychotherapy Project Addendum

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Further analysis of outcome data from the Sheffield Psychotherapy Project suggested that one of the principal therapists was responsible for most of the reported advantage of Prescriptive over Exploratory treatment.

The Sheffield Psychotherapy Project (Shapiro & Firth, 1987) compared the processes and outcomes of a cognitive–behavioural treatment called Prescriptive with those of an interpersonal–psychodynamic treatment called Exploratory. In a crossover design, each patient was seen by the same therapist in eight weekly sessions of one treatment, followed by eight sessions of the other. This design was selected in order to maximise the study's sensitivity to differences between the two treatments, by holding constant individual differences among clients and therapists.

As previously reported (Shapiro & Firth, 1987), patients began treatment with clinical levels of symptomatology (mainly depression), made substantial gains during treatment, improved similarly regardless of the order in which they received the two treatments, and had maintained their gains at a three-month follow-up. On average, patients showed greater gains during the first eight-session period than during the second, and when this was statistically controlled showed a little more gain during Prescriptive than during Exploratory therapy.

Since the inception of our project, individual differences in therapists' effectiveness have become of substantive interest in their own right, rather than being dismissed as 'nuisance variables' to be eliminated from consideration by careful design (Lambert, 1989). For example, Luborsky *et al* (1985) found wide, statistically reliable differences in mean outcomes *within* groups of therapists practising each of three approaches: supportive–expressive psychotherapy, cognitive–behavioural therapy, and drug counselling.

Alongside such differences in outcome between therapists, evidence also exists of individual differences in therapists' contributions to the therapeutic process. In the Sheffield Psychotherapy Project, for example, the two principal therapists differed in the grammatical forms or literal meanings they used, irrespective of the type of treatment (Stiles *et al*, 1989).

It therefore becomes of interest to compare the effectiveness of different therapists in the two treatments in the Sheffield project. The 40 patients were seen by four therapists. Therapists 1 and 2 (this article's first and second authors) saw 18 and 16 patients respectively, while therapists 3 and 4 saw four and two patients respectively. This paper compares these therapists with respect to their patients' improvement in each of the two treatments, with particular attention to therapists 1 and 2, who each saw sufficient patients to enable attribution of any difference to the therapists rather than to the patients.

## Method

The design and implementation of the Sheffield project are described in detail elsewhere (Shapiro & Firth, 1987). Each patient underwent an intake assessment including the Present State Examination (PSE; Wing *et al*, 1974), the Social Adjustment Scale (SAS; Weissman & Paykel, 1974), the Beck Depression Inventory (BDI; Beck *et al*, 1961), the Symptom Checklist-90 (SCH; Derogatis *et al*, 1973), and the O'Malley & Bachman (1979) Self-Esteem Scale (SE). Patients were assigned to therapists in accordance with scheduling and workload constraints, and as far as practicable we balanced the numbers of each sex seen by each therapist. Within each therapist's caseload, patients were randomly assigned to receive eight weekly sessions of either Exploratory or Prescriptive therapy. This randomisation was accomplished by the toss of a coin for each alternate patient of a given sex assigned to a given therapist, with the next patient of that sex seen by that therapist automatically assigned to the other treatment. After a second administration of the assessment battery, patients received the other treatment with the same therapist for a further eight weekly sessions, followed by third and fourth administrations of the assessment battery at termination and after a further three months. Therapists remained blind to each patient's assessment data until after the completion of treatment. As previously, we used a total symptom score from the PSE and a grand mean of all items on the SAS for statistical comparisons.

Patients were referred to a research clinic by general practitioners and psychiatrists. Inclusion criteria specified a total symptom score of at least 14 and an absence of

TABLE I

*Residual gains during Prescriptive and Exploratory therapies*[1]

| *Therapist and treatment* | *PSE*[2] | *BDI*[3] | *SCL–90*[4] | *SAS*[5] | *SE*[6] |
|---|---|---|---|---|---|
| *Therapist 1 (18 patients)* | | | | | |
| Prescriptive | 0.52 | 2.31 | 16.46 | 0.07 | 2.40 |
| Exploratory | −2.62 | −2.02 | −12.51 | −0.08 | −3.64 |
| *t* | 1.70 | 2.27* | 2.86* | 2.68* | 2.48* |
| *Therapist 2 (16 patients)* | | | | | |
| Prescriptive | 0.43 | 0.71 | 7.56 | 0.03 | −0.51 |
| Exploratory | −0.12 | −1.54 | −16.84 | 0.03 | −0.28 |
| *t* | <1 | 1.15 | 2.50* | <1 | <1 |
| *Therapists 3 & 4 (6 patients)* | | | | | |
| Prescriptive | 2.71 | −0.16 | 3.25 | 0.09 | −1.11 |
| Exploratory | 3.46 | 1.66 | 6.59 | 0.08 | −0.28 |
| *t* | <1 | <1 | <1 | <1 | <1 |

1. Higher scores indicate greater improvement. Some *ns* were slightly lower than the number of patients because of missing data on some measures.
2. Present State Examination total symptom score.
3. Beck Depression Inventory.
4. Symptom Checklist–90.
5. Social Adjustment Scale, overall mean.
6. O'Malley & Bachman Self-Esteem Scale total.

*$P<0.05$.

obsessional or psychotic symptoms on the PSE, a continuous history of psychological disorder not greater than two years, no significant recent change in psychotropic medication, current employment in a professional or managerial job, and a complaint that work was affected by psychological problems. There were 23 males and 17 females; their mean age was 40.7 years (range 27–62 years). Thirty patients were diagnosed depressed using the PSE–ID–Catego system of Wing *et al* (1974); the remainder had mainly anxiety disorders.

Therapists were clinical psychologists who had had prior training in both relationship-orientated and cognitive–behavioural methods and maintained confidence in the efficacy of both approaches. Therapists' adherence to treatment manuals and general treatment issues were addressed in weekly peer supervision.

The Prescriptive treatment, designed to represent cognitive and multimodal behavioural approaches, involved therapists selecting appropriate techniques from four areas: anxiety-control training, self-management procedures, cognitive restructuring, and a job-strain package. The Exploratory treatment, chosen to represent psychodynamic and interpersonal approaches, was based on Hobson's (1985) Conversational Model. Verbal response mode coding of these treatments confirmed a pattern of adherence to treatment manuals and large verbal process differences between treatments (Hardy & Shapiro, 1985; Stiles *et al*, 1988).

## Results

As previously (Shapiro & Firth, 1987), we used residual gain scores (Cronbach & Furby, 1970; Mintz *et al*, 1979) to assess improvement across each period of treatment. For each measure within each period of treatment, we calculated the deviation of each patient's ending score from the regression line of the beginning score upon the ending score. In other words, we controlled statistically for differences in symptomatology between patients at the start of each eight-session period before comparing their symptoms at the end of that period. Table I shows the mean residual gains (i.e. mean improvement scores adjusted to take account of initial symptom levels) achieved in each treatment (regardless of whether it was administered first or second) for therapist 1, therapist 2, and therapists 3 and 4 combined. The significance of each treatment difference was evaluated by *t*-test for related samples (also shown in Table I).

We have already reported (Shapiro & Firth, 1987) the results for therapists combined. These suggested a slight advantage for Prescriptive therapy, which produced numerically larger gains on all measures, significant only on the SCL–90 (mean residual gains of 11.09 and −11.09 for Prescriptive and Exploratory therapy respectively, $P<0.05$) and marginally significant on the BDI and SE ($P<0.10$ in each case). However, examination of Table I shows that only therapist 1's clients showed clearly differential results, with significantly greater gains in Prescriptive on four of the five measures and a trend in the same direction on the fifth. Among the other therapists' results, only therapist 2's significant difference on the SCL–90 supported the inference that Prescriptive was superior: most of the numerical differences were negligible or reversed.

For all therapists the overall effectiveness (i.e. mean patient change across all 16 sessions) was approximately the same. There were no significant effects on any of the five measures (a) in *t*-tests comparing therapists 1 and 2 on residual gain scores from intake to termination and from intake to follow-up, or (b) in one-way analysis of variance comparing all therapists on these scores, except that residual gains on the PSE at follow-up by the patients of therapists 3 and 4 averaged slightly larger (5.99) than those by patients of therapist 1 ($-2.42$) or therapist 2 (0.85) ($F(2, 36) = 3.61$, $P < 0.05$).

Given that assignment to therapists was based on availability rather than being formally randomised, we checked the comparability of symptoms at intake of clients assigned to each therapist and to each treatment order. $F$ ratios were less than 1 for all tests of main effects due to therapist and all tests of the interaction between therapist and treatment order for all five outcome variables, except for therapist differences on the BDI ($F$ (2, 34) = 1.09, $P = 0.35$).

## Discussion

The overall slight advantage of Prescriptive over Exploratory treatment appears mainly attributable to the differential effectiveness of therapist 1 in the former. Therapist 1 was not more effective than the other therapists overall, as his slightly greater effectiveness in Prescriptive was balanced by a slightly lesser effectiveness in Exploratory. (However, direct comparisons of therapists' effectiveness in each treatment were not significant, owing to small differences and small numbers of observations.) In addition, it is noteworthy that the one measure to show an advantage of Prescriptive therapy for both therapists 1 and 2 was the highly symptom-orientated SCL-90, which might be judged least favourable to Exploratory treatment.

Although patients were not assigned randomly to therapists, patients assigned to each therapist were very similar in symptomatology at the outset; the therapists rather than the patients were therefore the most likely source of the findings obtained.

Finding strong evidence of treatment differences for one therapist and weak or absent evidence for others underlines the importance of individual differences in therapeutic effectiveness, even in successfully manualised treatments. It lends added significance to detailed study of individual differences in therapists' in-session behaviour (Stiles *et al*, 1988) that may help to explain the differences in effectiveness. The simultaneous failure to find overall differences in therapist effectiveness across treatments suggests that, beyond general clinical competence, individual therapist characteristics may have a different impact depending upon which theoretical approach is employed.

This first Sheffield Psychotherapy Project was not designed as a study of therapist effects, but rather with a view to controlling these. With hindsight, the differential effectiveness revealed by the present analysis testifies to the failure of our attempt to design therapist effects out of the study. In response to the findings presented here, the factorial design of the Second Sheffield Psychotherapy Project (Shapiro *et al*, unpublished) addresses systematically the important question of therapist effects. Each of five therapists is randomly assigned 24 patients, 12 in Prescriptive and 12 in Exploratory therapy. The design and sample sizes will enable thorough comparisons between treatment and therapist effects on both process and outcome.

Meanwhile, the present findings are broadly consistent with clinical lore that each new therapist should try different approaches to find the one in which he or she is most effective.

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# An Uncontrolled Study of Cognitive Therapy for Morbid Jealousy

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Thirteen patients presenting with morbid jealousy were treated using a cognitive approach adapted from Beck's cognitive therapy for depression. Cognitions in morbid jealousy showed the characteristics of automatic thoughts as described by Beck, and were based on faulty assumptions derived from interpretations of past experiences. The cognitive treatment directed mainly at the faulty assumptions resulted in improvements in ten patients and no change in one; two patients dropped out of treatment. The results are considered encouraging.

Jealousy is a commonly experienced emotion, and in its extreme form it can be considered pathological. The term 'morbid jealousy' has been used to describe a wide range of phenomena, from delusional states through to jealous reactions that differ from normal jealousy in intensity or rationality (Shepherd, 1961). The concept of normal or reasonable jealousy is also problematic.

Attempts to explain these varied clinical phenomena have evoked a number of causal explanations, such as alcoholism (Krafft-Ebing, 1891), constitutional factors (Kraepelin, 1912; Westerterp, 1924; Lange, 1925), organic brain changes (Cardona, 1947), both somatic and psychic degenerative factors (Grimaldi, 1923), and the Oedipus complex (Fenichel, 1945; Klein, 1957). Morbid jealousy is, however, notoriously difficult to treat. This is probably because jealousy, besides being a problem in itself, is also a symptom of a number of different and varied psychiatric conditions (Shepherd, 1961).

One promising approach has been to compare morbid jealousy with obsessive–compulsive neurosis (Shepherd, 1961; Mooney, 1965; Vauhkonen, 1968; Doherty & Ellis, 1976). Cobb & Marks (1979) treated four cases of morbid jealousy with a treatment package adapted from behavioural techniques used to treat obsessive–compulsive disorders. They described one patient who one year after treatment was able to describe any jealous thoughts as "only an obsession", and this self-statement also helped him to stop any associated rituals such as checking up on his partner. It would appear that the behavioural package resulted in a change in the patient's cognitions. This suggests the intriguing idea that the techniques of cognitive therapy, described by Beck *et al* (1979) as successful in modifying negative cognitions and misperceptions in depressed patients, may be of therapeutic use in morbid jealousy. Clinically, many patients experiencing jealousy problems appear to make cognitive errors in misinterpreting events and intentions. In theory these errors should be amenable to analysis and modification.

This paper describes an uncontrolled study of cognitive modification techniques to treat patients experiencing morbid jealousy.

## Method

### Subjects

Thirteen patients presenting with morbid jealousy as described by Shepherd (1961) (i.e. patients with delusions of infidelity at one extreme to those reacting morbidly to jealous thoughts at the other) were included in the study. Patients with organic brain disease or a schizophrenic illness were excluded.

Two patients held a delusional belief of their partner's infidelity. In one of these the belief was monodelusional. The second patient had a diagnosis of atypical psychosis made one year earlier at another hospital, and she was on maintenance chlorpromazine at presentation. Seven patients suffered from depression with associated biological features that justified treatment with tricyclic antidepressants.

All patients held irrational beliefs about their partner's infidelity, which were frequently associated with excessive questioning, arguments, and checking up on their partner. Eleven patients revealed feelings of inferiority towards other members of the same sex, and two female patients avoided the sight of pictures of nude women on television or in magazines and newspapers. Three patients were physically violent towards their partners. Six patients identified specific precipitating events, such as the birth of a child with different eye colouring from the patient.

Of the 13 patients (age range 21–62 (mean 37) years), 7 were men. They had suffered from morbid jealousy from between 1 month to 30 years (mean 5.4).

Eleven patients were referred by their general practitioners, one patient was referred by his physician for functional epigastric pain and vomiting, and one was advised by a judge to seek psychiatric help.

### Treatment

*Cognitive dysfunctions: an explanatory heuristic*

Beck *et al*'s (1979) cognitive model of depression indicates that assumptions and cognitive errors lead to automatic thoughts, which are in turn associated with the negative affect. A similar situation is hypothesised in morbid jealousy: generalising assumptions contribute to irrational jealous thoughts, which can be considered equivalent to the automatic thoughts, defined by Beck *et al* (1979) as statements about the conclusions and not about the rules. They appear plausible and reasonable to the patient, who accepts them without question or without trying to test their reality. A similar process occurs with jealousy; for example, a male patient assumes that because one woman was unfaithful, all women are unfaithful, and because his wife is a woman she too must be unfaithful. His wife's potential unfaithfulness then becomes the intrusive jealous thought. The thought that his wife must be unfaithful is accepted unchallenged by the patient, and is evoked by any salient event. For example, a car parked opposite the house could be interpreted as belonging to the wife's 'lover', and the sight of the car will elicit thoughts of jealousy. This is similar to the mechanisms hypothesised for depression (Beck *et al*, 1983). Jealous thoughts appear to differ from the automatic thoughts of depression in that they are usually easily accessible, whereas the latter are initially very difficult to elicit. In these two characteristics of intrusiveness and accessibility, automatic jealous thoughts were based on faulty assumptions derived largely from interpretations of past experience. In 11 cases these experiences related to infidelity of significant members of the opposite sex.

In conclusion, we can hypothesise that previous experiences formed a meaning or an assumption (a schema) that was activated by a salient precipitating event. These assumptions play a role in the development of jealousy and self-evaluative cognitions. The activated schema will distort the processing of information, and the behaviour of the partner will be interpreted as further evidence of infidelity. This in turn will precipitate the increasing occurrence of jealous thoughts and their behavioural and emotional sequelae.

### Treatment programme

The treatment approach used in this study was formulated from the heuristic model described above, and consisted of establishing the individual's cognitive distortions. To identify the meaning of a previous experience as a source of cognitive errors and faulty assumptions, the patient was asked, "What made you think your partner was unfaithful? Can you go back and remember the first time you had such a thought pop into your head? What could have brought it on?" Similarly, if a patient revealed any ideas of inferiority, an attempt was made to establish their origin by asking why they thought they were not as good as other people.

The second step was to assist the patient to experience the changes in mood and behaviour related to changes in cognitions. This involved encouraging the patient to test out alternative explanations to the available evidence and to evaluate the consequences of these alternatives. Role playing was used when appropriate. The patient was instructed to challenge irrational and illogical inferences such as: "because one woman was unfaithful, all women, including my wife, will be unfaithful". Patients were encouraged to re-examine the biases in their interpretations of the available evidence in accepting such a conclusion. The therapist adopted a strategy that aimed at demonstrating to the patient that the generalisation of one person's behaviour to all members of the same sex, or of one person's behaviour at some stage in their life to every other stage, was not justified. Nor was it reasonable to blame one person for the behaviour of another.

Where a patient revealed poor self-esteem, the over-generalising assumptions were identified and dealt with by rationally examining the available facts, and also by identifying the patient's successes and positive points. For example, one female patient became very distressed by rude comments about her attractiveness made to her by a man whose advances she had just turned down. It was necessary to point out to her that she had had numerous boyfriends in the past who had found her attractive, and that the man's insulting remarks were made after she had rejected his advances.

Once the patients had achieved a rational statement or interpretation, they were asked to repeat or recall it several times a day, and especially whenever they experienced jealous thoughts. Hence they aimed to learn to control the emotional and behavioural reactions associated with the jealous thoughts by dismissing them as irrational.

### Assessment measures

The following measures were made before and after treatment and at six-month follow-up.

(a) Self-ratings of the frequency of targeted jealous thoughts and related behaviour were made on a nine-point scale (from 0 = not at all, to 8 = all the time).
(b) Retrospective ratings were made from case material on a seven-point scale of severity by an independent rater (NT) who was blind to when the material was taken (0 = absent to 6 = very severe). A second rater independently rated the material to assess the reliability of the scale. The reliability was acceptable (inter-rater agreement = 81%).
(c) Patients diagnosed as suffering from depression had its severity assessed using the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967), and the Beck Depression Inventory (BDI; Beck *et al*, 1961).

## Results

The improvement criterion developed by Marks *et al* (1975) was adapted for evaluating the outcome of the target scores of the frequency of ruminations and types of behaviour. That is: at follow-up a mean reduction of four or more points on the nine-point scale was recorded as much improved, less than four down to two points as improved, and less than two points as not improved. The reported improvements were only accepted when the partners, who were interviewed independently, confirmed the ratings.

The mean scores for ruminations and behaviour for the 11 patients who completed all assessments were: pre-treatment = 6.4, 5.0; post-treatment = 2.7, 2.1; follow-up = 1.4, 0.9.

Nine patients were much improved after treatment and at follow-up, and two patients were rated as improved in terms of ruminations after treatment; however, one of these was rated as not improved at follow-up. Two patients dropped out of treatment, and although no formal assessments were carried out on them, the family practitioner of one patient reported that she was much improved.

Twelve patients presented with behaviour related to their jealous thoughts, and of these, nine patients were much improved, one did not improve, and two dropped out of treatment.

Independent retrospective ratings on case material demonstrated a significant improvement over treatment (Wilcoxon matched pairs test, $P<0.005$) that was maintained at follow-up ($P<0.05$).

Data from the seven patients who presented with depression indicate that although the patients' depression clearly changed after the introduction of antidepressant medication, there were no parallel changes in the frequency of jealous thoughts. The jealous thoughts and emotional sequelae do show a dramatic reduction after the introduction of the cognitive therapy intervention. This indicates that the patients' depression, which was responsive to chemotherapy, was independent of the patients' morbid jealousy, which responded only to the cognitive therapy.

One patient was treated by pimozide, but with no response. The addition of cognitive therapy two months later achieved marked improvement, which unfortunately did not last after the discontinuation of pimozide. Eventually this patient had to be maintained on medication. A further patient was maintained on chlorpromazine and showed improvement on receiving cognitive therapy. These two cases suggest the essential role for appropriate medication in patients suffering from delusions.

At follow-up, all patients except three continued to live with their partners. Of the exceptions, two patients terminated their relationships for reasons other than jealousy. One of these patients was subsequently happily involved in another relationship. In one case the relationship was terminated because of jealousy.

## Discussion

The results of this study are encouraging. Although the trial was uncontrolled, marked improvements were made in a significant proportion of the patients.

The role of medication is an interesting one. Patients who experience delusions appear to need maintenance antipsychotic medication. This finding is in agreement with other writers (e.g. Mooney, 1965). One patient in this study benefited from the combination of cognitive therapy and pimozide, but from neither alone, although other writers have described case reports in which delusional jealousy has responded to pimozide alone (Dorian, 1979; Pollock, 1982; Munro, 1984). The use of antidepressants, which improved mood in the seven patients presenting with depression, did not appear to have any effect on morbid jealousy. Although morbid jealousy did appear to respond to cognitive therapy in these seven patients, it is not known whether treatment of their depression initially with antidepressants was a necessary precursor to this.

The roles of cognitive distortion and faulty assumptions in the aetiology of morbid jealousy are unclear. Patients do give examples of cognitive distortions, but these are not evidence of aetiology. Certainly, at this stage we know little about the cause of morbid jealousy, but we are encouraged by the heuristic value of applying Beck's cognitive model of psychopathology to morbid jealousy, and the therapeutic effectiveness of the treatment programme that it suggested in a condition known to be resistant to treatment (Enoch & Trethowan, 1979). Further research should be aimed at testing the efficacy of this treatment approach through a controlled trial, and secondly at generating hypotheses by which to test the cognitive model of morbid jealousy.

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# Life Events and Hostility in Self-Poisoning

ROGER FARMER and FRANCIS CREED

Life events in 82 self-poisoning subjects were studied using the Bedford College LEDS to see whether there was a difference between those who had a clear depressive syndrome (according to the Present State Examination) and the remainder. Equally high levels of severely threatening events were found in the depressed and non-depressed groups, but the former were older, had experienced more chronic difficulties and had been treated more often in the past for depression. Greatest numbers of life events were found in those with high levels of extrapunitiveness (recorded on the HDHQ), whereas those who had not experienced a severe life event showed predominance of intropunitiveness. Suicidal intent was not related to experience of life events, but has previously been shown to be associated with high intropunitiveness. The findings are discussed in the light of current theories linking life events, depression and parasuicide, and emphasise the need for longitudinal studies to examine these factors in relation to repeated parasuicide.

It is well recognised that parasuicide follows threatening life events. This fact has been reported in descriptive studies (Morgan *et al*, 1975) and those employing self-report questionnaires (e.g. Cochrane & Robertson, 1973; O'Brien & Farmer, 1980; Isherwood *et al*, 1982), but only one small study (Katschnig, 1980) has used the reliable Life Events and Difficulties Schedule (LEDS) of Brown & Harris (1978).

Where semistructured interviews have been used, the high frequency of events involving interpersonal problems is clear, notably major quarrels in the few weeks or days before parasuicide (Bancroft *et al*, 1977; Power *et al*, 1985). Paykel *et al* (1975) recorded life events of all types (during the previous six months) four times as frequently among parasuicide patients as among the general population, and twice as frequently as among depressives.

The relative roles of life events and depression in parasuicide remains unclear. Cochrane & Robertson (1973) found that scores of life stress were positively correlated with depression scores, and suggested that depression might act as a mediator between stress and self-harm. On the other hand, Slater & Depue (1981) demonstrated that a high incidence of exit events after the onset of depression was associated with parasuicide in depressed patients. Finally, O'Brien & Farmer (1980) thought that life events and parasuicide might have the same underlying cause, perhaps depression. The present study was, therefore, designed to clarify the role of life events in self-poisoning by comparing depressed and non-depressed self-poisoning patients.

Approximately half of all parasuicide patients admitted to hospital have a clear depressive syndrome (Urwin & Gibbons, 1979; Newson-Smith & Hirsch, 1979). But none of the studies of life events have examined the depressed parasuicide subjects separately, and it is not known whether this group of subjects have experienced a pattern of life events different from that experienced by those parasuicide subjects who do not have a depressive illness. Paykel *et al* (1975) found that the types of events preceding depression and parasuicide were similar, with the exception of entrances, which were more common among the latter. They also found that exit events were reported with similar frequency before depression and parasuicide.

Using the Bedford College LEDS (Brown & Harris, 1978), the present study was designed to test the hypothesis that severely threatening events before parasuicide would be greater among those subjects who showed sufficiently numerous and severe symptoms to merit the diagnosis of depressive illness than among the remainder. This diagnosis was made first according to the CATEGO computer program (Wing *et al*, 1974), but also using the higher threshold recommended by Urwin & Gibbons (1979) that was found to correspond more closely to a clinician's judgement. Quarrels and other interpersonal difficulties immediately before the parasuicide were predicted to be more likely in those who were not depressed.

Very high levels of hostility have been recorded among parasuicide subjects on the Hostility and Direction of Hostility Questionnaire (HDHQ, Caine *et al*, 1965) (Philip, 1977; Farmer & Creed, 1986; Farmer, 1987), and it was predicted that interpersonal difficulties would be most frequent in those with high hostility.

Only self-poisoning subjects between the ages of 17 and 35 years were studied, because at this age there are approximately equal numbers of depressed and non-depressed subjects (Urwin & Gibbons, 1979). In addition, this allowed us to compare the results with a community comparison group, studied in the same way (Creed, 1981).

## Method

The patients were consecutive admissions to a casualty short-stay ward or medical ward of a district general hospital, who had deliberately taken an excess of a substance believed to be harmful. It was the general policy of the hospital to admit all such patients for medical and psychiatric assessment. Only patients aged 17 to 35 years without any evidence of organic mental impairment or schizophrenia, and who remained in hospital to see a psychiatrist for routine assessment, were included in the study.

Sixty-two community subjects studied using the LEDS (Creed, 1981) provided comparison data. These subjects were selected from the roll of employees of a local borough council to match patients admitted to hospital for appendicectomy. They showed a similar age and sex distribution to the self-poisoning subjects.

The self-poisoning subjects were interviewed by R. F. (who was trained at Bedford College) within 72 hours of the overdose. The LEDS was administered to both groups of subjects to cover the 12 months before the overdose or interview. Briefly, the interviewer establishes named individuals who are close to the subject, and discovers whether any previously defined events have occurred to these individuals or to the subject during the previous year. The severity of threat of any event is rated by a group of experienced raters, who are aware only of the objective circumstances of the event. An event is described as severe if it is rated on the top two points of the four-point scale of severity and directly involves the subject. An independent event is one that could not have possibly resulted from any developing psychiatric illness. Other events are regarded as possibly independent, and any events resulting directly from psychiatric illness, such as admission to hospital, are regarded as illness-related events and excluded from the analyses.

Chronic difficulties were defined as problems which had gone on for at least four weeks and were rated in a similar way to events. Those difficulties on the top three points of the six-point scale were regarded as marked, which roughly corresponds to 'severe'.

Those events which could be regarded as an argument or rows were examined separately. All these events concerned face-to-face confrontation. Nearly all of them were also classified as interaction changes, miscellaneous crises, or under work.

Psychiatric symptoms were recorded using the Present State Examination and analysed using the CATEGO program (Wing *et al*, 1974). This instrument scores symptoms that have been present during the month preceding interview, but transient distress for a few days before an overdose is not likely to be rated as psychiatric illness. The CATEGO program yields an index of definition; level 5 and above indicates probable psychiatric illness, and this was taken to specify our cases of psychiatric illness, although we also examined the results using only those subjects who scored 16 or more symptoms on the PSE – a procedure described by Urwin & Gibbons (1979), which yields cases that correspond more closely to clinician's assessment.

The HDHQ (Caine *et al*, 1965) is a self-rating questionnaire of the true/false variety, consisting of 51 items. Two scales make up the intropunitive scale (self-criticism (SC) and guilt (G)) and three scales the extrapunitive scale (criticism of others (CO), urge to act out hostility (AH), and projected delusional hostility (PH)). Four composite scores were used in this study: general hostility (SC+G+CO+AH+PH), direction of hostility ((2SC+G)−(CO+AH+PH)), intropunitiveness (SC+G) and extrapunitiveness (CO+AH+PH). The HDHQ was administered to 73 subjects, and 70 completed fully.

### Statistics

Numbers of subjects in different categories, e.g. those with and without depression, were compared with either the $\chi^2$ test with Yates' correction, or Fisher's exact test, according to Siegel (1975). For continuous variables non-parametric tests were used: Spearman's rank-order coefficient for correlations and the Mann-Whitney *U*-test for comparisons between groups.

## Results

Eighty-two patients were interviewed (48 female, 34 male). Their mean age was 24.8 (s.d. 5.9) years. Fifty-three subjects were single, 21 married, seven were separated/divorced (three for less than one year) and one widowed. Fifty-nine had a confidant as defined in the LEDS. Forty-three were unemployed (13 for less than one year).

### Events

The numbers of subjects who had experienced an event in each three-week period in the year before the overdose is shown in Fig. 1. Only severe events significantly increased immediately before the overdose.

### Comparison between depressed and non-depressed subjects

Thirty-eight of the subjects were psychiatrically depressed according to the index of definition (levels 5–8), 32 allocated to CATEGO class N+ (with a tentative ICD–8 diagnosis (World Health Organization, 1967) as neurotic depression) and six to class R+ (tentatively diagnosed as either psychotic or neurotic depression). The depressed and non-depressed subjects were similar in sex distribution, but those with depression were significantly older than the remainder (27 v. 23 years, $P<0.001$), and significantly more had received treatment in the past for depression (14 of 38 v. 2 of 44, $P<0.01$). Slightly more of these subjects had previously taken an overdose (50% v. 38%), but the

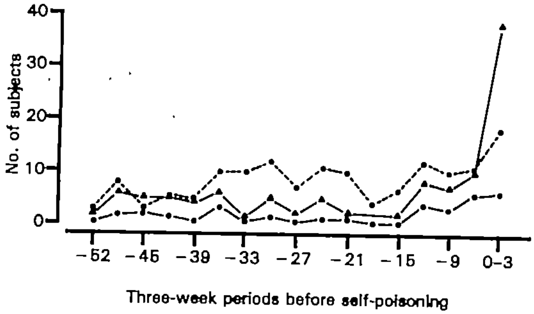

FIG. 1 Number of subjects who had experienced an event during each three-week period for the one year preceding self-poisoning. Results for all severe events (▲–▲) and only those severe events rated as independent (●—●) shown separately. (●–●, non-severe event).

proportion with a relative who had taken an overdose was similar (32% v. 28%). Similar results were obtained when the analyses were repeated using the definition of depression recommended by Urwin & Gibbons (1979).

The pattern of events for the depressed and non-depressed subjects are shown in Table I; there was no significant difference for severe events. During the 38 weeks before the overdose, but not over 13 weeks, the non-depressed subjects reported more events threatening in the short term than the depressed subjects. There was a general trend for those without depression to have experienced more events of all degrees of threat (first row of Table II), but this was not a significant difference. The rate of severe events was similar. Controlling for life stage made no difference to this result.

### *Types of events*

The most commonly reported severe events over the 38 weeks before the overdose were interaction changes (usually reduced contact with close relative, boy- or girlfriend, or confidant) and events involving contact with the police or attendance at court. The depressed and non-depressed subjects were not significantly different in their experience of type of event, including loss events or rows. There was a trend for the non-depressed patients to have experienced more police/court events than the depressed subjects (see Table IV).

TABLE I

*Number of self-poisoning subjects who have experienced a life event or difficulty during the specified time*

| | *Depressed subjects* (n = 38) | *Non-depressed subjects* (n = 44) | |
|---|---|---|---|
| Severe event: 3 weeks | 17 | 20 | NS |
| Severe event: 13 weeks | 25 | 27 | NS |
| Severe event: 38 weeks | 26 | 32 | NS |
| Short-term threat: 38 weeks | 27 | 40 | $P<0.05$ |
| Difficulty | 35 | 30 | $P<0.01$ |
| Severe difficulty | 18 | 11 | $P<0.05$ |
| Event in 38 weeks and/or difficulty | 30 | 34 | NS |

TABLE II

*Rates of events experienced by self-poisoning patients and community comparison subjects (figures in parentheses are for females only). Rate expressed as number of events over 38 weeks experienced by 100 persons*

| | *Self-poisoning subjects* | | | *Community subjects* |
|---|---|---|---|---|
| | *Depressed* (n = 38) | *Non-depressed* (n = 44) | *Total* (n = 82) | (n = 62) |
| All events | 274 | 343 | 311 (302) | 277 (303) |
| Severe events | 137 | 136 | 136 (138) | 29 (26) |

### *Chronic difficulties*

Table I demonstrates that significantly more of the depressed than of the non-depressed subjects had experienced a chronic difficulty, and this remained so when only severe difficulties (one to three on the seven-point scale of severity) were considered. Almost every kind of difficulty was reported more often by the depressed patients, but relationship difficulties, marital and sociosexual, were scored significantly more often by depressed patients (16 of 38 v. 8 of 44, $\chi^2=5.63$, $P<0.02$). In order to exclude those difficulties that might have been brought about by a change in a subject's behaviour secondary to illness, only those difficulties rated as independent were considered separately: the difference remained ($P<0.05$).

Dividing depressed and non-depressed patients according to the criteria of Unwin & Gibbons (1979) made no difference to the life-events results, but the groups were no longer significantly different in the proportion of those who had experienced a chronic difficulty.

## Community comparison group

The community comparison group had a similar average age to the self-poisoning group (by design), but was also similar in other respects: the proportions of females were 59% and 61% in the comparison group, and the proportions of single persons were 65% and 61% in the comparison group. A similar proportion had a stable partner (41% and 40%), but of these, significantly more of the self-poisoning patients had children (34% v. 16%, $P<0.05$).

Whereas life events as a whole were experienced at a similar rate by the self-poisoning and community groups (Table II), the former had a much higher exposure to severe events, with a rate almost five times that of the community group. Of the events reported by the overdose patients, 45% were rated as severe, compared with only 14.5% of the events reported by the community subjects.

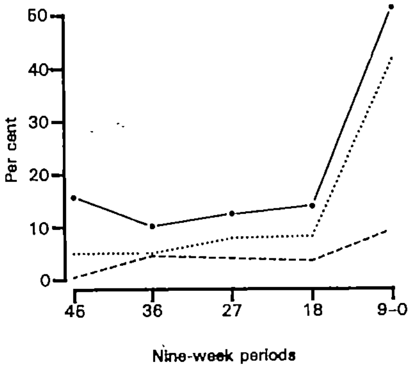

FIG. 2 Percentage of subjects who had experienced a severe event (rated 1 or 2 threat in long term) in each nine-week period for the 45 weeks preceding self-poisoning. O ‒ O, self-poisoning subjects; – —, community comparison. Graph from depressed subjects of Brown & Harris (1977) included for comparison (······).

TABLE III

*Number of subjects reporting at least one event or difficulty of each type in specified time*

| | All self-poisoning subjects (n=*82*) | Community subjects (n=*62*) | |
|---|---|---|---|
| All events: | | | |
| 3 weeks | 46 | 15 | *$P<0.001$ |
| 13 weeks | 57 | 27 | NS |
| 38 weeks | 62 | 34 | NS |
| Severe events: | | | |
| 3 weeks | 38 | 3 | *$P<0.001$ |
| 13 weeks | 52 | 5 | *$P<0.001$ |
| 38 weeks | 58 | 12 | *$P<0.001$ |
| Independent severe event: 38 weeks | 21 | 7 | $P<0.06$ |
| Severe difficulty | 26 | 10 | $P<0.01$ |
| Relationship difficulty | 24 | 5 | $P<0.05$ |
| Number without a confidant | 23 | 5 | $P<0.05$ |

The proportion of each group who experienced a severe event during each nine-week period in the 45 weeks before the overdose or interview is shown in Fig. 2. The self-poisoning patients had a raised rate of severe events throughout the year compared with the community group. The peak of severe events in the three weeks before the overdose was largely attributable to possibly independent events. This reflects the nature of these severe events; of the 46 events in the last three weeks, 15 involved interpersonal relationships or contact with the police, types of event conceivably within the control of the subject and not therefore rated as independent.

Table III shows that the significant differences between the self-poisoning and community groups lie in the proportion of each who have experienced a severe event or difficulty. Major rows were frequently reported by the overdose subjects (Table IV). Examples of these severely threatening events involved marital separation, a family member leaving home, or breakup of a serious girl–boyfriend relationship.

TABLE IV

*Number of severe events of each type during 38 weeks preceding overdose or interview. Number of subjects who have experienced at least one such event in parentheses*

| | *Self-poisoning subjects* Depressed (n=*38*) | *Self-poisoning subjects* Non-depressed (n=*44*) | *Community subjects* (n=*62*) |
|---|---|---|---|
| Interaction change | 17 (14) | 14 (13) | 2 (1)** |
| Police contact | 9 (6) | 19 (9) | 5 (3)* |
| Hospital admission | 8 (6) | 3 (2) | 9 (6) |
| Illness | 6 (4) | 4 (2) | — |
| Residence change | 1 (1) | 4 (3) | — |
| Loss of job | 2 (2) | 9 (6) | 1 (1)* |
| Miscellaneous crisis | 5 (5) | 5 (5) | 3 (3) |
| Row | 21 (15) | 19 (15) | 3 (3)** |

Comparison between all self-poisoning subjects and community comparison subjects: *$P<0.05$, **$P<0.001$.

### Hostility scores

Data on 70 of the self-poisoning subjects made it possible to examine hostility scores in subjects with certain patterns of life events over the year preceding the overdose. We have previously reported that highest scores of hostility were recorded in depressed self-poisoning subjects (Farmer & Creed, 1986).

When each type of event was compared with hostility scores, it was found that hostility scores increased with more 'legal' events (contact with the police or solicitor, or a court appearance), and the number of legal events correlated significantly with extrapunitive scores (rho = 0.26, d.f. = 68, $P<0.05$). The direction of hostility for those who had two or more legal events was +1.0 (predominant extrapunitiveness), compared with +3.5 for those with no police contact (predominant intropunitiveness).

Loss of a job was associated with greater general hostility ($P<0.01$), particularly inwardly-directed hostility ($P<0.05$). Self-criticism and guilt scores were higher in those who had lost their job (for both, $P<0.05$). There was no significant relationship between hostility score and any other type of event, but there was a significant correlation between levels of extrapunitive hostility and the total number of severe events reported for the year before the overdose (rho = 0.58, $P<0.0001$, d.f. = 51).

Twenty-four subjects had not experienced a severe event during the 13 weeks preceding the self-poisoning. These subjects had a direction of hostility score of +5.3, compared with a score for the remainder of +1.7 ($P=0.01$). This high positive direction of hostility score indicates considerable excess intropunitiveness over extrapunitiveness, and might play a part in the explanation of self-poisoning in those who have not experienced a severe event. (Ten of these had a severe difficulty and all 24 had a short-term threat event in the preceding 13 weeks.)

**Suicidal intent**

We have previously demonstrated that high intropunitiveness is associated with high suicidal intent (Farmer & Creed, 1986). There was a trend for those 19 subjects who showed highest suicidal intent to be in the higher life stages (52% had children, compared with 29% of the remainder) and to have more chronic difficulties (32% v. 17%), but the pattern of life events was similar.

## Discussion

Bancroft *et al* (1977) suggested that a detailed inquiry such as the LEDS would not be possible soon after recovery from an overdose, but no difficulty was found in the present study in eliciting detailed information within a few days of the overdose from all the subjects available for interview. The only methodological difficulty was the rating of events that had occurred in the few days before the self-poisoning, when long-term threat (rated at about one week) was not clear.

It must be recognised that the study included only those who were detained in hospital following the self-poisoning, and who were prepared to stay and see the psychiatrist for routine assessment (approximately half of all patients reaching hospital following an overdose (Black & Creed, 1988)). It is possible that those who were not studied were different from the present sample.

The overall results concerning life events were similar to those of others, with a sharp increase immediately before the overdose, interpersonal arguments being prominent (Paykel *et al*, 1975; Katschnig, 1980; Power *et al*, 1985). The nature of the interpersonal crises were similar to those previously recorded (Farmer, 1986). Like Bancroft *et al* (1977), we found that rows preceded the overdose more frequently in women than men.

However, the hypothesis that depressed subjects would have experienced more severe events in the weeks preceding self-poisoning was not borne out. It appears that the depressed subjects were distinguished from the remainder by their more advanced age (and life stage, i.e. being married and having children) and the long-standing nature of their problems. The latter is seen in their chronic difficulties, in addition to the threatening events, and the previous treatment for depression.

We were unable to follow up the subjects in the present study, but Newson-Smith & Hirsch (1979) showed that those with a high PSE score were most likely to remain depressed three months after the self-poisoning. Presumably the presence of chronic difficulties plays a part in the persistence of symptoms, as difficulties are unlikely to resolve in a short time, whereas stressful life events may be 'neutralised' by a beneficial event (Tennant *et al*, 1981). This suggestion needs to be tested in a longitudinal study, as it is possible that difficulties, rather than life events, may have predictive value.

The design of this study did allow us to examine previous suggestions on how life stress and depression might interact in leading to parasuicide. Slater & Depue (1981) suggested that life events precipitated depression but that further threatening events were associated with parasuicide. According to this model, life events peak with the onset of depression at about 11 weeks before the episode of self-harm, with high levels then continuing right up to the episode. This was not borne out in the present study: we found no peak in the number of events experienced by the depressed subjects, except immediately before the overdose.

Bancroft *et al* (1977) discuss the finding of Weissman *et al* (1973) that depression causes interpersonal conflict rather than the other way round. Our data cannot settle this issue because the onset of depression was not readily assessed in each case, although it was generally found that the onset of depression followed chronic difficulties, but preceded the severe event closest in time to the overdose. For many subjects the chronic difficulty was a relationship difficulty, so the sequence for the depressed subjects would have been: chronic relationship difficulty, onset of depression, rupture of close relationship (or other crisis), overdose. For the non-depressed subjects the first two steps would have been omitted.

O'Brien & Farmer (1980) suggested that both life events and parasuicide are caused by depression, but this cannot be a complete picture, as the present study makes it clear that severe events are common even in the absence of depression. For certain kinds of event (those carrying severe short-term threat), rates of life events were higher in the non-depressed subjects. However, the severe events that were more common were those in the possibly independent category, and may well have occurred as a result of the subjects' mood and actions.

Cochrane & Robertson (1975) suggested that depression might act as a mediator between stress through life events and parasuicide, because levels of event stress and depression scores were positively correlated in their study. But their suggestion has been refuted by the findings of the present study, which has demonstrated no excess of life events in association with increasingly severe depression.

Comparisons of our results with those of others must be qualified by the recognition that we have used a standardised threshold of depression, whereas others have used the term in a more generalised, descriptive way.

The difference between the depressed and non-depressed subjects for events severely threatening in the short term suggests that at least some of the non-depressed subjects experienced repeated events involving contact with the police, job loss or change of residence, presenting only a short-lived severe threat. These types of events, especially if repeated, may stem from personality difficulties. There was some evidence of this in the hostility results, but these must be treated with some caution, as hostility was only measured at the time of crisis, when some of the patients were depressed – it would need to be assessed in a longitudinal study to provide a true reflection of personality.

Since life events are so frequent immediately before parasuicide, those subjects who have not experienced a severe event are of particular interest. Their direction of hostility scores indicated high intropunitiveness, which we have previously found to be associated with high suicidal intent (Farmer & Creed, 1986). This subgroup of patients deserves further study, as it may include those most likely to kill themselves if their mental state does not improve.

Power *et al* (1985) found that suicidal intent, but not medical lethality, was related to life stress, measured by the Paykel method, experienced over the six months before parasuicide. Our results are not directly comparable with theirs, because we have used the PSE/ID method to classify illness, whereas Power *et al* simply used scores from the General Health Questionnaire (GHQ). However, it is of interest that our results show no clear relationship between suicidal intent and life events. Our results indicate that any relationship between GHQ score and suicidal intent could be explained by the intervening variable of intropunitiveness; this may be a product of depression and personality, and can be fully ascertained only in a longitudinal study.

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# Lithium Prophylaxis and Expressed Emotion*

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Expressed emotion (EE) in key relatives of 21 patients with bipolar affective or schizoaffective psychoses was assessed by the CFI. All patients had been on prophylactic lithium for at least three years and were without psychotic symptoms at interview. The relationship between relatives' EE status and patients' course of illness was studied both retrospectively and prospectively. Two critical remarks designated high EE. The relatives' EE status was not related to number of hospital admissions or to severity and length of recurrences if the entire period of lithium treatment is considered as a whole. However, patients living with high-EE relatives showed a significantly poorer response during the three years before interview, and an even poorer response in the nine-month follow-up.

The key relatives' expressed emotion (EE) as assessed by the Camberwell Family Interview (CFI) was originally found to predict the relapse rate in schizophrenia (Brown *et al*, 1972; Leff & Vaughn, 1980; Falloon *et al*, 1984; Vaughn *et al*, 1984; Hooley, 1985; Hogarty *et al*, 1986). Further studies showed EE to predict the course of neurotic depression (Leff & Vaughn, 1980), major depression (Hooley, 1986; Hooley *et al*, 1986), and recent-onset mania (Miklowitz *et al*, 1987). In the depressive samples, the cut-off point in frequency of critical remarks for defining high EE was lowered from the usual six to two or three respectively.

The theoretical implications and the clinical value of the so-called EE construct still remain disputed (Koenigsberg & Handley, 1986; Hatfield *et al*, 1987; Kanter *et al*, 1987). In schizophrenia, prophylactic medication has been suggested to be particularly helpful for patients living with high-EE relatives in reducing the relapse rate during nine-month follow-up, while patients living with low-EE relatives would benefit from longer prophylaxis, of two years (Leff & Vaughn, 1981). Social interventions in such families have been shown to reduce both EE in relatives and relapse rate in patients (Leff *et al*, 1982; Falloon *et al*, 1982, 1985; Hogarty *et al*, 1986).

We studied a sample of patients with bipolar affective and schizoaffective psychoses, who had already been on lithium for at least three years. Prophylactic lithium leads to an overall reduction of frequency and severity of relapses in affective psychosis (Angst *et al*, 1970; Prien *et al*, 1984; Smulevitch *et al*, 1974), but even in patients who may be regarded as responders, protection is not always complete. This study investigated whether and in what way EE could affect response to lithium. We examined the relationship of the relatives' EE to the course of illness, both retrospectively and prospectively.

## Method

In 1967, a special lithium clinic was established in this department. From this clinic we selected all patients with the diagnosis of bipolar affective or schizoaffective psychosis who had been on lithium continuously for at least three years, were free of any psychotic symptoms presently, and lived closely with a key relative. Of 34 such patients, six refused to take part in the study, and the relatives of a further seven were either reluctant to be interviewed or unavailable. These 13 patients not included in the sample did not differ significantly from those studied in sex, age, diagnosis, or duration of lithium treatment. All 21 patients studied had only one 'key relative': those 21 relatives comprised 16 spouses, two mothers, two sons, and a fellow nun of the patient.

All interviews were administered by the same interviewer (CW) in our department, and were rated by the same rater (SP) (who was trained and found sufficiently reliable by C. Vaughn in London). The rater was blind to the clinical features of the patients at the time of the rating and had no involvement in treatment. The course of illness was assessed by the frequency of hospital admissions and, in a more complex way, by a modification of the 'morbidity index', originally proposed by Coppen *et al* (1973), and widely used in longitudinal lithium research. Two different morbidity indices referring to severity and length of relapses were used. 'Morbidity index 1' is based upon hospital admissions only (number of days spent in hospital multiplied by three and divided by number of all days of prophylactic lithium treatment). 'Morbidity index 2' includes recurrences not resulting in admission (morbidity index 1 plus all days on which the psychiatrist notices symptoms of depression or hypomania, and/or an additional temporary antidepressive or neuroleptic medication is given, multiplied by two and divided by number of prophylactic treatment days). The two morbidity

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*The findings presented here are part of the thesis of CW.

TABLE I

*Age, duration of lithium treatment, mean serum levels throughout three years before CFI, and amount of face-to-face contact with key relatives per week for patients living with low- or high-EE relatives*

| | *Patients living with low-EE relatives (n = 10)*[1] | | *Patients living with high-EE relatives (n = 11)*[2] | |
|---|---|---|---|---|
| | *Mean* | *s.d.* | *Mean* | *s.d.* |
| Age: years | 45.2 | 7.2 | 50.1 | 7.4 |
| Duration of lithium treatment: years | 8.6 | 5.6 | 12.5 | 4.4 |
| Mean serum levels of lithium: mmol/l | 0.77 | 0.08 | 0.83 | 0.16 |
| Face-to-face contact per week: hours | 36.8 | 14.3 | 40.5 | 10.1 |

No significant differences between groups.

1. Eight women, two men.
2. Six women, five men (NS).

indices were calculated retrospectively for the whole time of lithium treatment, for three years and one year before the CFI, and prospectively for the nine months following interview. During that period, clinicians did not know either the content of CFIs or EE ratings. Patients continued to be treated in the usual way.

## Results

The mean age of the 21 patients (14 female, 7 male) was 48 years (range: 37–61, s.d. = 7.5). In 18 patients, the diagnosis was bipolar affective psychosis, and in three, schizoaffective psychosis according to ICD–9 classification (World Health Organization, 1978). The patients had been on prophylactic lithium continuously for 3–19 years, on average for 10 years. The serum levels throughout the three years before interview varied between 0.51 and 1.10 mmol/l. A sufficient compliance to medication can be assumed for all these patients during that time.

In CFI, nine relatives made no critical remark, one relative made one critical remark, and four relatives made two critical comments. Four and seven critical remarks were each expressed by two relatives, and nine, 11, and 12 remarks by one relative each. Three relatives had a score of one or more on the hostility scale, and two (both mothers) scored three or more on the overinvolvement scale. The weekly face-to-face contact was 39 h on average (range 10–60 h).

Since we did not know beforehand how many critical remarks should classify a relative as high EE, we decided to take the median as first cut-off point. The ten relatives with no or one critical remark were allocated to low-EE status, and the 11 with two or more critical remarks to high-EE status. All relatives who scored on the hostility scale or had a score of three or more on the overinvolvement scale, were assigned to the second group, so that those scales did not need to be used for classifying a relative as high EE.

Table I shows that the basic characteristics of patients living with low- or high-relatives did not significantly differ. In Table II, frequency of hospital admissions and morbidity indices before the interview are summarised.

The number of hospitalised recurrences and morbidity indices for the whole period of lithium treatment do not differ significantly. Thus patients living with high-EE relatives had not had a more unfavourable course from first illness. However, for the three- and one-year periods before CFI, differences are apparent, although only the difference in morbidity index 2 for three years reaches statistical significance, being more than two times higher in patients living with high-EE relatives.

Table III shows morbidity indices and hospital admissions in the two groups of patients during a nine-month follow-up. The fourth row shows how many patients in each group had a morbidity index 2 of zero, indicating no recurrence of psychotic symptoms and no additional temporary medication during the nine months.

The difference between the two groups in morbidity indices are more obvious prospectively than retrospectively: morbidity index 2 is more than eight times higher in patients living with high-EE relatives. Of patients living with low-EE relatives, 70% remained free of any psychotic symptoms and did not need additional medication, while only 18% of patients living with high-EE relatives did.

If one changes the cut-off point in critical remarks for definition of high EE stepwise, morbidity indices are always higher in patients living with high-EE relatives. However, retrospectively, that difference reaches statistical significance only when one takes two critical remarks as threshold. Prospectively, the picture is slightly different. If one allocates all relatives with any critical remark to high-EE status, an even better prediction of course of illness during follow-up is possible. This is because the only patient living with a relative who made one critical remark was admitted for a recurrency. There was some evidence that this patient, like another one who also relapsed, had terminated lithium treatment some weeks before the relapse. Otherwise, the compliance during follow-up was thought to be satisfactory, according to serum levels, which are controlled seven to eight times per year on average. The number of face-to-face contacts per week was not related to morbidity indices retrospectively, nor could it contribute to the prediction of morbidity indices prospectively.

## Discussion

The frequency of critical remarks in general, and subsequently the cut-off point for high-EE classification, seem to be comparatively low. This may be due to a consistent bias in rating or to general changes of critical attitudes during a mostly successful long-term treatment (Volk & Müller-Oerlinghausen, 1988). It should be taken into account that the EE index was introduced to assess a relative's attitude during or immediately after an acute episode of the patients' illness, and that its predictive value has been on this basis. If relatives of schizophrenic patients are reinterviewed nine

TABLE II
*Frequency of hospital admissions and morbidity indices for whole period of lithium treatment, and three years and one year before CFI for patients living with low- or high-EE relatives*

| | *Patients living with low-EE relatives (n = 10)* | *Patients living with high-EE relatives (n = 11)* | |
|---|---|---|---|
| *Whole period of lithium treatment: means ± s.d.* | | | |
| No. of hospital admissions | $3.9 \pm 2.5$ | $4.0 \pm 2.4$ | NS |
| Morbidity: | | | |
| index 1 | $0.10 \pm 0.07$ | $0.07 \pm 0.05$ | NS |
| index 2 | $0.15 \pm 0.12$ | $0.16 \pm 0.08$ | NS |
| *Three years before CFI* | | | |
| Hospital admissions: yes/no | 2/8 | 4/7 | NS |
| Morbidity: means ± s.d. | | | |
| index 1 | $0.04 \pm 0.07$ | $0.06 \pm 0.11$ | |
| index 2 | $0.10 \pm 0.13$ | $0.27 \pm 0.21$ | $P<0.05$ ($t=2.25$; d.f. = 19)[1] |
| *One year before CFI* | | | |
| Hospital admissions: yes/no | 0/10 | 1/10 | NS |
| Morbidity: means ± s.d. | | | |
| index 1 | $0.00 \pm 0.00$ | $0.04 \pm 0.12$ | NS |
| index 2 | $0.06 \pm 0.11$ | $0.22 \pm 0.25$ | NS ($t=1.89$; d.f. = 19; $P<0.10$)[1] |

1. All *t*-tests were two-tailed.

TABLE III
*Hospital admissions and morbidity indices during nine-month follow-up for patients living with low- or high-EE relatives*

| | *Patients living with low-EE relatives (n = 10)* | *Patients living with high-EE relatives (n = 11)* | |
|---|---|---|---|
| Hospital admissions: yes/no | 1/9 | 4/7 | NS |
| Morbidity: means ± s.d. | | | |
| index 1 | $0.01 \pm 0.04$ | $0.15 \pm 0.21$ | NS ($t=1.90$; d.f. = 19; $P<0.10$)[1] |
| index 2 | $0.04 \pm 0.06$ | $0.34 \pm 0.20$ | $P<0.001$[1] ($t=4.62$; d.f. = 19) |
| Morbidity index 2 equal to or higher than zero | 7/3 | 2/9 | $P<0.05$[2] |

1. All *t*-tests were two-tailed.
2. Fisher's exact test.

months later, while patients are in remission, they have been found to be less critical, and about 30% change from high- to low-EE status (Brown *et al*, 1972). In our study, relatives were interviewed while patients were free of symptoms. This may account for the low frequency of critical remarks and, therefore, the impact of very few critical remarks is likely to be different from in the original studies.

There is no generally accepted definition of 'response' towards lithium prophylaxis. However, most patients in this sample should be regarded as full or partial lithium responders–in absolute non-responders, lithium treatment would have been terminated after three years. Nevertheless, their key relatives' EE is obviously related to the course of illness. While patients living with high-EE relatives show higher morbidity indices, i.e. a poorer response in the immediate past, they are not simply more severely ill over the total period of lithium treatment, nor do they differ in basic clinical characteristics. Nevertheless, their risk of relapse is higher within the next nine months. Prospectively, EE is more closely related to relapses than retrospectively. This difference suggests a causal relationship between interactional patterns in the patients' families as indicated by EE and the course of illness.

This sample was highly selective and fairly small, and so the results cannot be generalised. A conclusion for prophylactic treatment of bipolar affective disorders might be that social interventions in the families at least of those patients living with high-EE relatives and being classified as only partial responders, should be added to lithium medication. However, what form those interventions should take, and whether experiences with therapeutic interventions in the families of schizophrenic patients can be transferred, still remain open questions.

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# Perceptivity and Paraceptivity During Measurement of Gastric Emptying in Anorexia and Bulimia Nervosa

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Gastric emptying of a mixed meal was measured in 22 patients with anorexia nervosa, ten with bulimia nervosa and ten controls. Ratings on a visual analogue scale (VAS) were made during the test. Patients with anorexia nervosa felt fuller and less hungry than controls, although satiety was not related to gastric emptying rate. Controls showed a correlation of about 0.6 between gastric contents and reported hunger and satiety. Patients with anorexia nervosa had significantly lower correlations between gastric contents and hunger, but normal correlations with fullness. Significant correlations were often observed between gastric contents and symptoms of eating disorder in both anorexic and bulimic groups, but not in controls.

Anorexia nervosa is a complex disorder in which disturbances are recognised in physiological, cognitive, psychodynamic and family function. In an early attempt to explain some clinical manifestations of the illness, Bruch (1966) suggested that patients were unable to perceive or interpret somatic and visceral sensory information, and that this led to abnormalities of body image and of the states of hunger and satiety that normally contribute to the control of food intake. The disturbances of perception of body image have been confirmed (Slade, 1985), although not all studies have demonstrated differences between patients with eating disorders and normal women. However, studies of the perception of internal state (interoception) in patients with anorexia nervosa have been lacking, although reports of delayed gastric emptying in these patients suggest that disturbed satiety may play a part in perpetuating the disorder (Robinson *et al*, 1988).

Visceral stimuli of relevance to food intake are gastric contractions and stomach fullness. Cannon & Washburn (1912) originally suggested that perception of gastric contractions is fairly accurate, although this has not been confirmed in more extensive studies (Stunkard & Koch, 1964; Whitehead & Drescher, 1980). An attempt to measure the ability to detect changes in gastric fullness (Coddington & Bruch, 1970) by introducing different volumes of nutrient into the stomach via a gastric tube suggested that some normal individuals can do so fairly accurately; subjects with morbid obesity, as well as two patients with anorexia nervosa, were less accurate. Other studies of anorexic patients have relied on questionnaires and analogue scales, without measuring gastric contents; these suggest disturbances in satiety alone (Garfinkel, 1974) or both hunger and satiety (Owen *et al*, 1985). Studies of responses to eating in patients with bulimia nervosa (Russell, 1979) have suggested a tendency to report decreased satiety compared with controls (Robinson *et al*, 1983), and increased hunger and urge to eat after meals (Robinson *et al*, 1985). No study of interoceptive ability has, however, been reported in bulimic subjects.

In order to investigate interoception in eating disorders, ratings on a visual analogue scale (VAS) were compared, in the present study, with simultaneous measures of gastric contents derived scintigraphically at different times after a meal in patients with anorexia nervosa or bulimia nervosa, and controls.

## Method

### Subjects

Twenty-two patients who fulfilled accepted criteria for anorexia nervosa (Russell, 1983) were tested. Ten of these patients were selecting their own diet, either as out-patients (seven patients) or as in-patients undergoing observation without active treatment, and 12 were investigated after a mean of two weeks of active refeeding in an in-patient unit, during which they received at least 2500 kcal per day. They had all suffered severe self-imposed weight loss, with secondary amenorrhoea for at least six months, and manifested a morbid fear of fatness. These patients were aged from 18 to 40, one was male, and they had suffered a variety of symptoms of anorexia nervosa, including self-starvation, bulimia and self-induced vomiting (Table 1). Eight patients were retested after they had reached a healthy weight.

Ten female patients with bulimia nervosa, according to the criteria of Russell (1979), were tested. Clinical information pertinent to these patients, none of whom was severely underweight, is also summarised in Table 1.

TABLE I
*Demographic and clinical information (mean (s.e.) or frequencies) on patients and control subjects*

| | *Controls* | *Patients* | |
|---|---|---|---|
| | | *Anorexia nervosa* | *Bulimia nervosa* |
| Age: years | 28.7 (1.4) | 29.1 (2.5) | 25.1 (1.6) |
| History: years | 0 | 6.8 (1.8) | 8.1 (1.5) |
| Body Mass index[1] | 21.9 (0.5) | 15.4 (0.43) | 23.7 (1.5) |
| Sex (F/M) | 8/2 | 21/1 | 10/0 |
| Bulimia | 0 | 10 | 10 |
| Vomiting | 0 | 9 | 8 |
| Laxative abuse | 0 | 4 | 4 |
| *n* | 10 | 22 | 10 |

1. Weight/height$^2$, normal range 19–24 kg/m$^2$. The mean body mass index for the anorexics is significantly different from the other two values.

Normal controls were drawn from the same age range as the patients, with a similar sex distribution. Controls scored within the normal range on the Eating Attitudes Test (Garner & Garfinkel, 1979) and the Dutch Eating Behaviour Questionnaire (Van Strien *et al*, 1985).

### Gastric emptying

Subjects were given a meal consisting of 60 ml poached egg white, labelled with technetium-99 m (3.7 MBq) and sliced with an egg slicer in two directions at right angles, one slice of bread and butter, and 150 ml fresh orange juice, giving a total of 155 kcal in 235 ml. After the meal was eaten, the subject stood with the anterior abdominal wall in contact with an IGE Maxicamera gamma camera for one minute, while an anterior scan was acquired. A posterior scan was acquired in the next minute and regions of interest were drawn around the resulting gastric outlines. Scans were acquired every five to ten minutes for two hours, and the geometric means of each pair of anterior and posterior scans were determined, corrected for decay and expressed as a percentage of the total counts originally in the stomach.

### Rating scales

Before and ten minutes after the meal, subjects completed, respectively, the hunger and satiety questionnaires of Garfinkel (1974), modified to apply to meals of fixed size. These checklists include ratings of gastric sensations, overall sensations, mood, urge to eat and pre-occupation with food. Patients with anorexia nervosa differ from controls on the satiety but not the hunger questionnaire (Garfinkel, 1974). On two occasions before the meal, and whenever an anterior scan was acquired after the meal, eight VAS ratings were made. Because of the position of the gamma camera, a traditional pencil and paper VAS was impractical, so an electrical equivalent was devised. Forty light-emitting diodes (LEDs) were mounted in a 10 cm line, labelled at the ends with the words 'Not at all' or 'Extremely'. Subjects were instructed to regard the extremes of the scale as representing the greatest and least degrees of the feeling that they could imagine. Above the line of LEDs a label was displayed. The labels used were 'Hungry', 'Sad', 'Full', 'Tense', 'Urge to eat', 'Fat', 'Nausea', 'Urge to be sick' and 'Drowsy'. Subjects adjusted a rheostat until the illuminated LED represented the position on the scale reflecting their feelings at that moment. The distance of that light from the 'Not at all' end of the scale was then recorded by an observer. Except for two ('Fat', 'Urge to be sick'), all these scales are represented in the Garfinkel questionnaires by analogous items.

### Statistics

Results of categorical measures were assessed using $\chi^2$ tests, and VAS ratings were compared between groups of subjects with repeated measures analysis of variance, using ratings made at three times: immediately before and after the meal, and at 100 minutes from the beginning of the meal.

Correlations between gastric contents and scale ratings were derived using Spearman's rank test, and values of Spearman's rho within each subject separately were calculated for each scale. Correlations were compared between groups of subjects using one-way analysis of variance with *post-hoc* Duncan's tests to indicate significantly different pairs of means.

Linear regression analysis was performed on the same data in order to establish the characteristics of the curves relating gastric contents to each rating for individual subjects. It was found, however, that in a number of cases, regression could not be performed, even after log data transformation, and using relatively liberal criteria for entry into the analysis ($P<0.2$). Hence, the number of analyses that yielded curves at this level of probability was compared between subject groups using $\chi^2$. For this calculation, the results were combined into three groups: scales associated with normal eating (normal-eating scales: hungry, full, urge to eat), scales measuring morbid symptoms related to eating and weight (eating disorder symptoms: fat, nausea, and urge to be sick), and lastly, three scales measuring symptoms unrelated to eating and weight (non-eating disorder symptoms: sad, tense, and drowsy).

Because results from patients with anorexia nervosa on self-selection and refeeding diets were not significantly different from each other, data from all low-weight patients with anorexia nervosa were pooled and compared with those from control subjects and patients with bulimia nervosa. Results from subjects tested before and after weight gain were analysed using paired *t*-tests.

## Results

### Hunger and satiety questionnaires

Responses on the hunger questionnaire were not significantly different from controls in either patient group. On the satiety questionnaire, patients with anorexia nervosa were significantly ($P<0.05$) more likely to report the feelings of having a full stomach and being bloated, and less

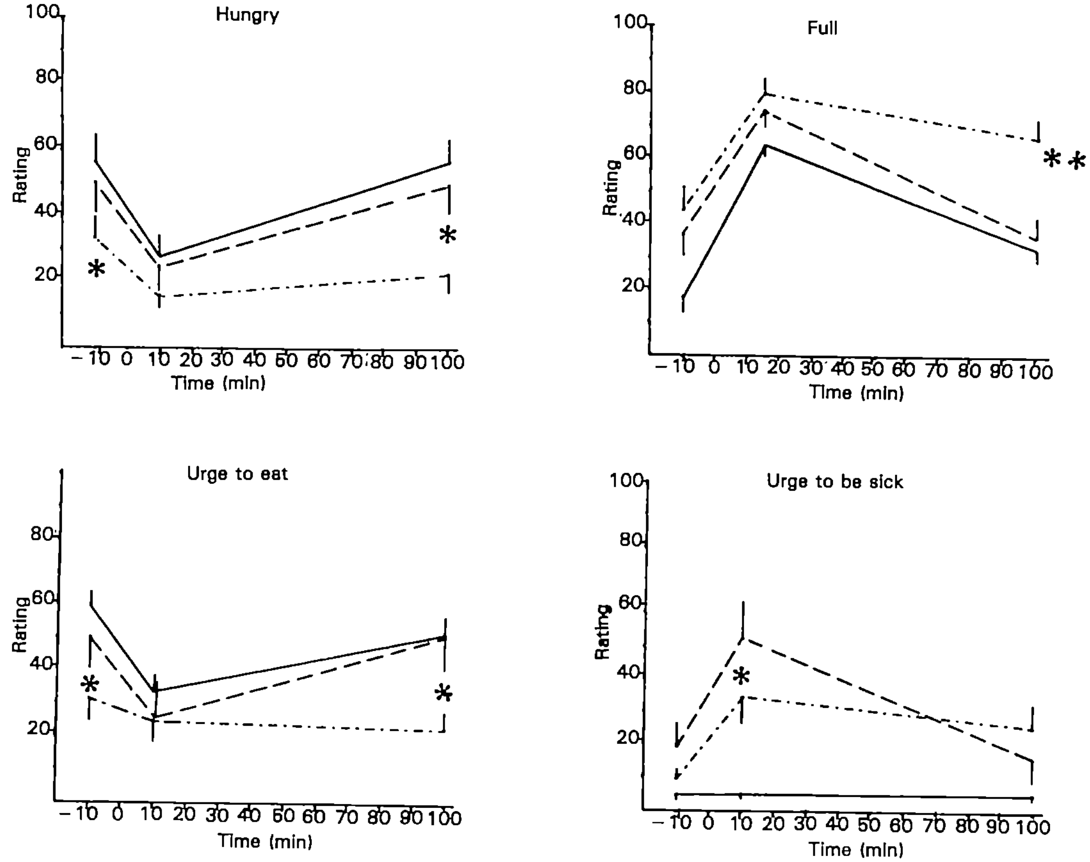


FIG. 1 Visual analogue ratings (means ± s.e.m.) by controls (—) and patients with anorexia nervosa (-·-·) and bulimia nervosa (- - - -), 10 min before and after and 100 min after a small meal. Results of one-way ANOVA at each time. For urge to eat at − 10 min: anorexics significantly different ($P<0.05$) from controls. For other indicated points: $*P<0.05$, $**P<0.001$ significantly different from other two groups. A significant effect of time was found in a repeated-measures ANOVA for all four scales.

likely to report feeling calm or contented than controls. Compared with controls, patients with bulimia nervosa reported more 'bloating' and less 'contentment' after the meal.

### Absolute VAS ratings

In the repeated measures analysis of variance, a significant effect of the meal on hunger, fullness and urge to eat was observed, in the expected direction. That is, subjects felt relatively hungry before eating, and the feelings declined after the meal and rose again by 100 minutes (Fig. 1). Anorexic patients scored significantly on hunger and urge to eat (hunger scales) and higher scores on fullness (satiety). Patients with bulimia nervosa did not show significant deviations from normal on these eating-related scales. However, both anorexia nervosa and bulimia nervosa patients had higher overall scores for nausea, urge to be sick, sadness, fatness, tension and drowsiness.

Interactions for diagnostic group and meal were observed for urge to eat, nausea, and urge to be sick. For urge to eat, the interaction reflected poor recovery of the scores with time in patients with anorexia nervosa compared with the other two groups (Fig. 1). Similarly poor recovery of scores was seen for hunger and fullness, although the effects were not significant. Patients with anorexia nervosa therefore showed prolonged satiety, which might be related to slow gastric emptying. However, ratings from patients with fast gastric emptying were not significantly different from those with slow emptying (defined as greater than 50% retention of the meal in the stomach at 100 minutes), and analysis of covariance showed no significant effect of gastric emptying rate on hunger and satiety scores, or on any other scale.

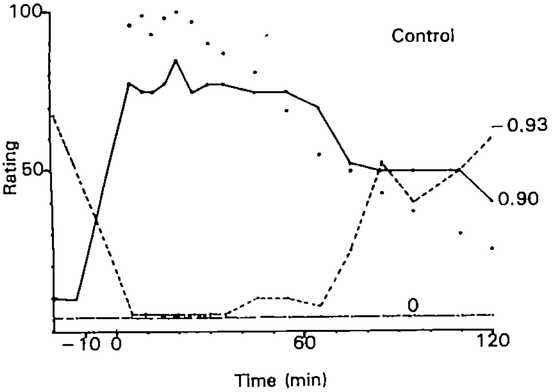
Controls had low scores for nausea, with little change over time; patients with anorexia nervosa had higher scores, which rose after eating and rose still further at 100 minutes, while patients with bulimia nervosa had high scores, rising after eating and then falling to normal values by 100 minutes. Ratings of urge to be sick were low in all controls. However, patients in both anorexic and bulimic groups

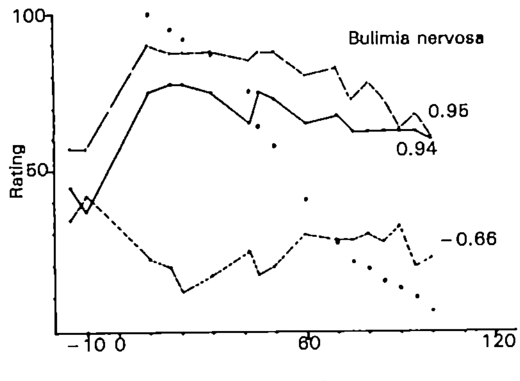
TABLE II

*Mean values × 100 (s.e.) for within-subject Spearman's rank-correlation coefficients between VAS ratings and gastric contents and VAS intercorrelations*

| | *Controls* | | *Patients* | | | |
|---|---|---|---|---|---|---|
| | | | *Anorexia nervosa* | | *Bulimia nervosa* | |
| Hungry | $-59^1$ | (11) | $-24^2$ | (9) | −43 | (11) |
| Full | 57 | (15) | 46 | (8) | 62 | (9) |
| Urge to eat | $-58^1$ | (14) | $-2^2$ | (7) | $-39^1$ | (16) |
| Fat | $-18^1$ | (8) | $30^2$ | (7) | $38^2$ | (12) |
| Nausea | $-7^1$ | (7) | 23 | (8) | $51^2$ | (14) |
| Urge to be sick | $-8^1$ | (9) | $41^2$ | (7) | $61^2$ | (10) |
| Sad | $-1^1$ | (12) | $11^1$ | (9) | $42^2$ | (11) |
| Tense | 1 | (8) | −4 | (9) | 12 | (15) |
| Drowsy | 5 | (11) | 8 | (8) | −13 | (16) |
| Hungry/full | −55 | (15) | −34 | (8) | −64 | (8) |
| Hungry/urge to eat | $62^1$ | (12) | $27^2$ | (7) | $71^1$ | (8) |
| Full/urge to eat | $-42^1$ | (16) | $-9^2$ | (8) | $-54^1$ | (13) |

Means with different superscripts are significantly different (analysis of variance, Duncan's test).





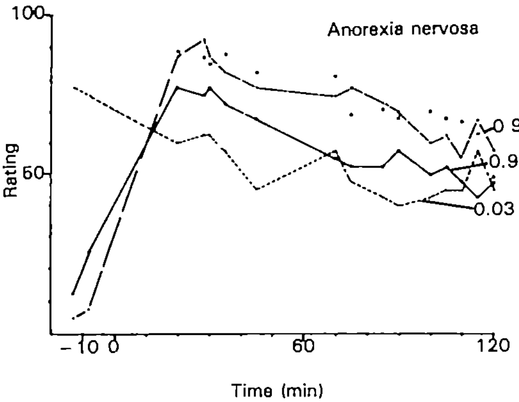


FIG. 2 Time-activity curves for gastric emptying from three subjects with superimposed VAS scores from the same subjects. Correlation coefficients (Spearman's rho) between gastric counts and VAS are given. Fullness is accurately perceived by the three groups. Urge to eat is appropriately rated by controls and patients with bulimia nervosa, and urge to be sick is related to gastric contents for patients but not controls. ····, % gastric counts remaining; scale ratings are: —, full; - - - -, urge to eat; — — —, urge to be sick.

showed significant increases after eating, which declined by 100 minutes (Fig. 1). Changes in nausea and urge to be sick were observed both in patients who practised self-induced vomiting and in those who did not, and multivariate analysis of variance revealed no significant effect of bulimia, vomiting or abuse of laxatives on these two scales.

## Correlations between gastric contents and VAS ratings

Spearman rank correlations were determined between the percentage of the original counts remaining in the stomach and the score for each scale at every time point available, in order to provide a measure of the relationship between ratings and gastric contents (Table II, Fig. 2). Correlations between the three normal-feeding scales (hungry, full, and urge to eat) were also determined.

### *Controls*

In Control subjects, significant correlations were generally only observed between gastric counts and one or more of the three measures associated with normal feeding: hunger, fullness, and urge to eat. The average value of Spearman's rho for these scales was ±0.60 (with the sign in the expected direction) and, of the ten controls, all had significant ($P \leq 0.01$) correlations in at least one of these scales. Of the other scales, a significant correlation was noted between gastric contents and sadness in one subject.

### *Anorexia nervosa*

Patients with anorexia nervosa had significantly lower correlations between gastric contents and urge to eat

($P<0.05$) while correlations with hunger showed a trend in the same direction ($P=0.057$), reflected in a significant *post-hoc* difference (Duncan's test) between controls and anorexic patients. Correlations between hunger and urge to eat and between fullness and urge to eat were significantly poorer in patients with anorexia nervosa compared with controls. Two scales (fatness and urge to be sick) showed significantly higher correlations in anorexic patients than in controls. The relationship between gastric contents and the score for fullness was not significantly poorer in anorexia nervosa compared with controls. Thus, while a rating of satiety appeared to be normally correlated with gastric contents, ratings of hunger were not, and an abnormal association between symptoms of anorexia nervosa and gastric contents was noted. In eight patients in whom the studies were repeated after weight gain (a mean of 10.3 kg over nine weeks), no significant change was observed in correlations between gastric contents and rating on any scale.

### *Bulimia nervosa*

The ten patients with bulimia nervosa differed significantly from controls on four scales (sadness, fatness, nausea, and urge to be sick), and in every case, correlations for patients were higher than for controls. For other scales, there was no significant difference between patients and controls.

### *Regression analyses*

In several of the studies, simple regression analysis, with a criterion for entry set at a liberal $P\leqslant0.2$, could not be performed, either because the VAS score was constant throughout the study, or because the correlation between gastric contents and the particular VAS was around zero. Curve parameters cannot, therefore, be compared between groups. For the normal-eating scales, curves were derived in 25 out of 30 analyses in controls (10 subjects × 3 scales), 21 out of 30 analyses in patients with bulimia nervosa, and 35 out of 66 analyses (22 patients × 3 scales) in patients with anorexia nervosa ($\chi^2=8.81$, d.f.$=2$, $P=0.012$). For the eating disorder symptoms, curves were derived in 4 out of 30 analyses in controls, 18 out of 30 in bulimics, and 21 out of 66 in anorexic patients ($\chi^2=14.9$, $P<0.001$). Lastly, for non-eating disorder symptoms, curves were derived in 9 out of 30 analyses in controls, 19 out of 30 analyses in bulimics, and 21 out of 66 in anorexic patients ($\chi^2=9.93$, $P<0.007$).

## Discussion

In this study, disturbances in the experiences of hunger and satiety, and in their relationship with gastric function, have been demonstrated in anorexia nervosa. Moreover, anomalous links were observed between gastric contents and eating disorder symptoms in both anorexia and bulimia nervosa.

Using questionnaires, differences between controls and eating-disordered patients were observed for satiety, but not for hunger, results similar to those reported by Garfinkel (1974), who found that patients with anorexia nervosa were more likely to indicate unpleasant gastric sensations after a standard meal than controls. Using VASs in the present study, patients with anorexia nervosa reported feeling less hungry but more full than controls, particularly some time after the end of the meal. However, scores of gastric fullness at 100 minutes in patients found to have delayed gastric emptying (Robinson *et al*, 1988) were not significantly different from scores of patients with normal gastric transit. Repeated testing of the same subjects at different gastric emptying rates might show changes in perceived satiety not apparent in the present study, in which a between-subjects design was used. However, the results indicate a cognitive disturbance reflecting the observed delay in gastric emptying, but persisting when gastric emptying had returned to normal. Whether this cognitive disturbance antedates the development of anorexia nervosa is unknown.

Patients with anorexia nervosa therefore overestimate gastric contents in a way apparently analogous to the overestimation of body image that has been well documented in this disorder (Slade, 1985). Several symptoms were also found to be increased relative to controls in both patients with anorexia and bulimia nervosa, reflecting both specific and general psychopathology in these patients (Russell, 1979, 1983; Fairburn & Cooper, 1984). Normal subjects showed reasonably good correlations between gastric contents and scales measuring hunger and satiety, but not with other scales. In patients with anorexia nervosa, correlations for satiety were not significantly abnormal, but correlations for urge to eat were, and patients often related gastric contents to symptoms. Patients with bulimia nervosa showed normal correlations for hunger and satiety but, like the anorexic patients, showed significant correlations between gastric contents and symptoms. These results were supported using regression analysis, in which significantly more controls and bulimia nervosa patients yielded regression curves for scales associated with normal eating, while curves linking gastric contents with various symptoms were more common among anorexic and bulimic patients.

Coddington & Bruch (1970) suggested that some normal subjects are able to discern with fair accuracy what is placed in the stomach, while Whitehead & Drescher (1980) found that they were rather poor at detecting gastric contractions. Using a different approach, the present study suggests that normal subjects can often relate changes in gastric contents to feelings of hunger and satiety, and that the average correlation between hedonic rating and the physiological measure is about 0.6. The gastric scan measured only part of the mixed meal, that is the egg, and may not have reflected accurately its other constituents, nor could it give information on upper gastrointestinal secretions or intragastric pressure. It is, therefore, an imperfect measure of gastric contents, and an incomplete assessment of gastric function, and the results obtained should be interpreted with caution. Moreover, changes observed in subjects' ratings of fullness or hunger may have been influenced by the subject's own expectations and learned responses to eating.

It may, however, be concluded that, in anorexia nervosa, although gastric fullness is rated higher than in controls, after a similar meal, it changes in the expected fashion with gastric emptying, that is, by a gradual decline. Analogous changes in the patients did not occur with the scales describing hunger and urge to eat, which often bore no relation to all to gastric contents. One possible interpretation is that while perception of gastric afferent signals is intact, further processing into behavioural strategy (the urge to eat) does not occur normally. This suggestion, which is consistent with the patient's view of eating as a feared precursor of weight gain, is supported by significantly poorer correlations between fullness and urge to eat in anorexic patients compared with controls. The finding also suggests that, at least in pathological states, hunger and satiety can be dissociated. The distortion of gastric sensations extended to an apparent misidentification in anorexia nervosa and bulimia nervosa of gastric signals as feeling states that represent morbid symptoms, a disturbance which it is suggested here be called paraceptivity (i.e. distorted perceptivity).

Bruch (1966) suggested that patients with anorexia nervosa show disturbances in the perception of sensory information arising in the gastrointestinal tract, or in its interpretation. The present results favour the second of these alternatives.

### Acknowledgements

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# Comments on the Northwick Park 'Functional' Psychosis Study*

G. M. GOODWIN, D. A. W. JOHNSON and R. G. McCREADIE

"Functional psychosis is conventionally subdivided into schizophrenia and manic depressive psychosis. Response to treatment is assumed to be a validating criterion for these diagnoses. The efficacy of pimozide (a dopamine antagonist neuroleptic), lithium, and a combination of the two was compared with that of placebo in a 4-week trial in 120 functionally psychotic patients, each of whom was assessed for psychotic symptoms, manic symptoms, and depressive symptoms. The sample was subdivided into patients with predominantly elevated mood, predominantly depressed mood, and no consistent mood change. Pimozide reduced psychotic symptoms in all groups of patients. The only significant effect of lithium was to reduce elevated mood. Thus dopamine blockade seems relevant to the resolution of psychotic symptoms in all types of 'functional' psychosis, but the mode of action of lithium in psychotic patients concerns only mood. Application of standardised classifications of functional psychosis to these data did not change this conclusion."

The summary quoted above is from an article printed in the *Lancet* last July (Johnstone *et al*, 1988). The present authors were invited to comment upon the study.

## G. M. Goodwin

Dr Eve Johnstone, Dr Tim Crow, and their colleagues at the Medical Research Council Unit at Northwick Park are to be congratulated on the completion of a large controlled trial of the treatment of acute psychotic illness. The patients, depressed, manic or schizophrenic, received by random allocation lithium, pimozide, both drugs, or placebo. Diagnostic category proved to be a poor predictor of therapeutic response. Instead, particular symptoms emerged as responsive to particular classes of drugs. For example, delusions and hallucinations clearly responded to pimozide, irrespective of diagnosis. The response to lithium of elevated mood showed a similar trend, but it was less striking. Depressive symptoms were not clearly responsive to lithium or neuroleptic treatment. This outcome may not occasion much surprise. However, following this trial and others on the efficacy of electroconvulsive therapy (ECT) (e.g. Brandon *et al*, 1984), selection of treatment for the major psychiatric disorders can be made on the basis of real knowledge rather than superstition, and this should justifiably be a source of pride to the profession and of protection to our patients.

The Northwick Park trial raises further issues concerning treatment. The successful reduction of symptoms during administration of placebo in severe illness suggests a powerful therapeutic effect of in-patient admission that, in good hospitals, is perhaps too easily taken for granted. This may yet have to be formally proved, to prevent the run-down of in-patient facilities that currently threatens the National Health Service. In addition, while we may know when and for whom to start a variety of treatments, we do not enjoy the same confidence about stopping them. Our management of relapse and recurrence remains largely hit and miss.

As well as its practical implications, differential response to drug treatment may offer a way of classifying either illnesses or symptoms in a more meaningful way. The finding of a differentiation between the effects of pimozide, a selective dopamine antagonist, and lithium, which is without effect upon the basic pharmacology of dopamine (Wood & Goodwin, 1987), strongly suggests that a disorder of dopamine receptor function underlies the occurrence of delusions, hallucinations, and thought disorder. However, this conclusion holds not simply in relation to schizophrenia, where similar arguments are already familiar (Carlsson, 1978; Peroutka & Snyder, 1980), but also in affective disorder when the same symptoms are seen. Since the drug response fails to obey the illness boundaries as we currently draw them, the investigators advance the notion that a spectrum of psychotic illness offers a more valid concept of aetiology than a differentiated diagnostic schema with discrete boundaries between conditions.

The preceding suggestion appears to carry a familiar argument about nosology beyond symptoms, but can it really do so? Drug responsiveness emerges from this study as simply one more detail about symptoms. Diagnosis still has to derive from the properties and segregation of symptoms and, for example, a boundary cannot be distinguished between mania and schizophrenia from symptoms alone (Kendell, 1987). Unless drug responsiveness can be used to pull apart symptoms that usually occur together, it cannot help us. Furthermore, it does not follow that there cannot be multiple, underlying, distinct causes of similar-looking illnesses. We simply lack the ability to describe and measure these causes which could be, for example, heterogeneous genomic abnormalities.

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*This is the first of a new series in which comments will be invited on important papers appearing in other journals.

Whatever the implications for our eventual understanding of the true pathology of psychiatric illness, the mediating brain mechanisms are likely to remain of fundamental significance to our investigation and treatment of these disorders, as the physiology of other organs is for other diseases. It remains an exciting prospect if a biological continuum can be convincingly identified and understood as the substrate for psychiatric symptoms. Dopaminergic transmission offers the paradigm case in psychosis. The actions of pharmacologically specific compounds, either as treatments or as challenge drugs, can provide an assay of neurotransmitter function. Such pharmacological investigation will continue to be of major importance to our understanding as well as our practice.

## D. A. W. Johnson

The Northwick Park group are to be congratulated on the completion and publication of a further research project that sets out to question and evaluate a common clinical practice in the treatment of major psychosis and the tenents upon which these practices are based. Such critical investigation should be welcomed, but the clinical time and commitment involved for placebo studies make their appearance all too rare. The paper raises important questions concerning both the diagnosis and treatment of 'functional' psychosis of moderate severity. However, there are a number of equally important reasons why their results and conclusions should be interpreted with considerable caution.

As with all double-blind trials carried out under strict guidelines determined by the need for scientific evaluation, the ability to generalise to the full spectrum of illness under normal clinical conditions must itself be carefully considered. The high quality of staff and frequent staff–patient contacts may produce both enhanced placebo responses and improved responses in patients on active drugs. The inclusion of both first-illness psychosis, with its more uncertain aetiology, treatment response, and natural history, and more chronic illness inevitably complicate the issues. The fact that only 29% of the available sample for inclusion in the trial completed the study must further limit extrapolation to a wider, unselected spectrum of patients.

The duration of the study was only four weeks. This must raise a number of important issues that prevent any firm conclusion. It assumes that this duration is sufficient for both drugs to produce their optimal therapeutic effect, but this is an unsafe assumption. In previous work, the Northwick Park group have suggested that the specific antipsychotic effect of a neuroleptic drug may be postponed for two to three weeks, with the earlier changes in mental state being determined more by the non-specific (sedative) drug effects and the influence of environment. In this study, the dose of pimozide is arguably at a non-therapeutic level for the first five to seven days of the trial. Together, these factors suggest that it would be unsafe to interpret any response until the third, or perhaps even more probably the fourth week as a specific effect of the antipsychotic or dopamine-blocking action of the drug. Certainly, it must be accepted that the mechanism of any response before this interval is liable to alternative interpretations, and it would be unwise to argue fundamental biochemical or diagnostic issues upon the early symptom changes.

The issues surrounding the response to lithium are equally clouded within this short, four-week period: individual patients vary substantially in their tolerance of this drug, and the speed at which they achieve desirable blood levels. It would be surprising if a significant minority did not take a week or even longer to achieve the desired stable state. The interval required for a response of manic symptoms is itself a grey area: a consensus of clinicians would probably be that the minimum period for a response is seven to ten days, with some opting for an even longer interval of 14 days. The time required for other forms of symptom response to lithium is even less well documented. It must be seriously questioned whether lithium would have a reasonable opportunity to produce any meaningful therapeutic effect before the third week of the trial, and for some patients even by the fourth week. A further question to be answered is whether any apparent symptom change is a true drug response that is sustained over a reasonable period of time. The more delayed it is believed a drug response is, the less certain we can be that the apparent response within the four-week period is a meaningful clinical change. It would be reasonable to require a knowledge of at least several weeks' follow-up to judge a true difference in the drug effects on symptoms.

A further complication is that all patients, including those receiving placebo, experienced a significant improvement over the time interval monitored. This would require a drug effect to have more impact before it could be detected to significant levels and, therefore, increase the risk of a false negative result in evaluating the differences between two drugs. When two drugs have a different speed of onset, the drug with the slower onset is likely to be selectively penalised. It could be argued that lithium is such a drug, in comparison with pimozide.

Another important consideration is the size of the cells under analysis. Although 120 patients entered the study, only 105 completed the trial period. The patients were first stratified into four groups according to symptoms, and then divided into four cells for random allocation for one of four treatments. As a consequence, the number of patients included in some cells is quite small, and this again must increase the risks of false negative results.

It is recognised that the Northwick Park group have succeeded in completing a most difficult study with great skill. It may seem churlish to be unduly critical, but the implications of their results are important to the clinical care of patients. The authors comment not only on treatment but also on the implications for diagnosis and basic biochemical mechanisms. On the balance of probabilities, though, it is unlikely that the changes demonstrated during the first two weeks, and more probably the first three weeks, are due principally to the specific antipsychotic or mood action of the drugs. Nor can it be accepted that lithium and pimozide have had an equal opportunity to demonstrate their therapeutic effects. The risks of false negative results are considerable. The authors point to important areas that require further investigation. The issues of additional medication and polypharmacy are important because of the additional risks to the patient of side-effects that are potentially irreversible. This study cannot be regarded as definitive, nor would I believe the authors would wish this. Great caution must be used in interpreting these results, and it would be imprudent to build yet more theories on these preliminary findings.

## R. G. McCreadie

Many years ago, Dr Eve Johnstone and I were lecturers in the University Department of Psychological Medicine at the Southern General Hospital, Glasgow. Our Friday afternoon assessment meetings would run a fairly typical course. New patients, who usually had a functional psychosis, would be presented by the most junior trainee. There would then follow a detailed analysis of the patient's symptoms (and of the junior's knowledge). Are there first-rank symptoms? Is the patient's mood elevated? Is the affect depressed or blunt? A diagnosis was eventually reached – schizophrenia or affective illness, the latter divided into manic–depressive disorder and endogenous depression. A diagnosis of schizoaffective illness was frowned upon and rarely used – it smacked of sloppy thinking and indecision.

But then a treatment plan would be decided. If the patient had schizophrenia, he would be prescribed chlorpromazine or thiordiazine, and if this was not effective after two or three weeks, ECT would be added. If the patient was manic, he would be prescribed chlorpromazine or thioridazine, and if this was not effective after two or three weeks, ECT would be added. If the patient was depressed with delusional ideas, ECT would be prescribed, and if this was not effective after two or three weeks, chlorpromazine or thioridazine would be added.

The most junior trainee (often a vocational trainee) would leave the meeting bemused. "Why did I have to get that grilling – the patients receive the same treatment anyway." We would then mutter, not always convincingly, about differences in prognosis and outcome. This scenario will be familiar to all clinicians. Little has changed over 20 years, except that the use of ECT has diminished.

It is surprising that in view of clinicians' knowledge of the lack of specificity of treatments in functional psychosis, only now has the problem been closely examined by Dr Johnstone and her colleagues. It is an elegantly designed study and the results confirm clinicians' experience – the effects of an antipsychotic are on symptoms and are not diagnosis-specific. I am only sorry that there was not also an ECT group; this would not have clarified the theoretical points raised by the study, but it would have been clinically interesting if ECT was found in all three groups to be equally effective for both mood and positive symptoms.

Their discussion on treatment response as a validating criterion for diagnosis is less convincing. There are two views about the classification of functional psychosis – dimensional and categorical. The authors suggest that their results are more consistent with the former. However, is it not possible to have both a dimensional and categorical classification of functional psychosis, which is likely to be genetically and biochemically a heterogeneous disorder? Can there not be groups of patients with 'schizophrenia' produced through abnormalities of a specific gene (chromosome 5?); groups with 'affective illness' produced through abnormalities of a specific gene (chromosome 11, the X chromosome?); and groups, probably larger than the former two, with schizophrenia, schizoaffective, and manic-depressive disorder mediated through a polygenic system (the dimensional group)? All such diverse conditions may, through different routes, eventually converge on the final common pathways of the dopamine and possibly noradrenergic and 5HT systems – with clinically rather similar presentations.

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Editor: Ian Pullen

**Contents:** 'Normal' eccentrics/Schizophrenia before 1800/Elementary, my dear Freud/CT studies of schizophrenia/Capgras' syndrome/Unitary models of schizophrenia/Self-rating/Pre-pubertal depressive stupor/Multiple personality disorder/Lofepramine-induced hyponatraemia/Munchausen syndrome masquerading as AIDS-induced depression/Corrigenda

## 'Normal' eccentrics

Sir: Dr Tantam's recent papers (*Journal*, December 1988, **153**, 777–782, 783–791) on life-long eccentricity and social isolation among psychiatric patients are a significant contribution to the literature. However, restricting studies of eccentricity to psychiatric patients and conjoining eccentricity with isolation portrays eccentrics as more pathological than they are, in the main. A comparison with our large-scale community-based research programme (Weeks & Ward, 1988) shows a substantial number of tantalising near-similarities and differences.

In the first place, there is no natural association between eccentricity and social isolation; or, if there is, it is attenuated and indirect. Using interview items derived from the UCLA Loneliness Scale (Russell *et al*, 1980), augmented by direct observations of domestic and neighbourhood circumstances, we found that only 25% of our sample of eccentrics ($n = 130$) were currently socially isolated. In only 9% of our sample was the social isolation more enduring. This is quite a crucial issue. The fact that one is alone or in the company of others obviously influences experience. The constructive use of solitude may be one of the best indicators of positive mental health and well-being. Patients are more frequently alone and spend more time 'idling' or 'doing nothing in particular' than normal control subjects. Patients also do not use their spare time for purposeful activities as often as normal subjects. This is especially true when patients are at home, where 'idling' rises for them but does not change for normal subjects. Furthermore, in the evening, when time spent in organised leisure activity triples for normal subjects, it remains unchanged for patients. Chronic patients differ from normal subjects in showing less thought and activity congruence when they are alone. Patients also register more pathological thought content when alone. Daydreaming increased markedly when chronic patients are alone, but shifts to more focused thinking when they are with others (Larson & Csikszentmihalyi, 1983; de Vries *et al*, 1986; Delespaul & de Vries, 1987).

We realise that Dr Tantam's subjects were selected not only on the basis of their social isolation, but also of psychiatric contact and in-patient treatment. This too is untypical of the vast majority of eccentrics. Only one of our subjects was actively psychotic at interview; he had been ill for quite some time, but had wholly avoided any contact with doctors. Only 9 subjects (7%) had a previous history of psychiatric contact. However, 73% of our sample had at least one PSE first-rank symptom of formal thought disorder, albeit in mild form and of infrequent occurrence.

There were a number of other differences. In our community study, the male:female ratio was less heavily skewed towards males, at 1.3:1. Our subjects were older (mean age 47 years, range 15–80, better educated (mean years of education 14), and of higher intelligence (mean IQ = 118, s.d. = 14.5). Only five subjects, all teenagers, were living in the parental home. For all the other subjects there was little, if any, conflict in their current living accommodation, although they reported that in their childhood and adolescence they received much expressed criticism from their parents and teachers. This happened most commonly to eccentrics who developed personality features that were most markedly imagination-orientated, rule-disregarding and showing forthrightness. None were developmentally delayed; if anything, they were somewhat ahead of several developmental milestones. Although they were developmentally deviant, none had autistic features at interview or had ever had diagnosed autism-spectrum disorders. Only ten subjects of employable age were unemployed. Problems at work were not about initiative or task-complexity, but rather about non-conformity and arguing with workmates and supervisors.

Ten subjects (8%) had a schizoid personality disorder, but only one other subject had a schizotypal personality disorder. Forty seven subjects (36%) had a family history of overt eccentricity, but only five subjects had a relative who had received treatment for a nervous disorder, and only two of these had been a first-degree relative. Only seven subjects, five males and two females, were homosexual; of these, one was now celebate and one was a transvestite. Only two subjects had ever committed criminal offences. These involved repeated substance abuse in the first case and selling defective electrical appliances in the second. Aggression was minimal. Fifty two subjects (40%) demonstrated impaired empathy, but another 32 (25%) demonstrated excellent empathy and rapport. Many of the subjects were self-centred as children, and a third of the sample continued to be notably self-referencing when speaking about other people or neutral topics. However, the relationships of these eccentrics with their parents and siblings had not deteriorated as they became older. Rather than emotional detachment and unsociability, this sample demonstrated the defense mechanisms of rationalisation, intellectualisation; and sometimes emotional isolation. Many had more than a single 'special interest'; on average they had about five obsessive preoccupations which were happily pursued. Their use of visual imagery was positive and strong. Those who were creative were also those with vivid nocturnal dreams and daydreams.

We have collected a great deal of evidence that shows eccentrics to be exceptionally creative in the arts and sciences. Our work describes how and why their originality has come about. Their giftedness was often unrecognised in childhood; their extreme curiosity led to much exploratory behaviour which was perceived as disruptive and a 'discipline problem'. Their positive traits – optimism, an ebullient sense of fun, independence of spirit, and innovatory ideas – as well as their natural variability, go some way to explain their evolutionary advantage. Eccentrics in the community are even more heterogeneous than a clinical sample. They are also much less socially disabled. They are the exceptions that prove the rule that incongruity between the individual and his context is not necessarily a sign of maladjustment or maladaptation. These admitted discordances are signally interesting in their own right. They show how our diagnostic definitions and vocabularies are shot through with value judgments, however hard we try to operationalise our criteria. They are a telling reminder that syndromes of personality are even more socially constructed than are psychiatric disorders.

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## Schizophrenia before 1800

SIR: Hare (*Journal*, October 1988, **153**, 521–531) offers a thorough and diligent historical analysis confined to the English speaking countries. I appreciate his thesis that schizophrenia was increasingly recognised after 1800. However, I hesitate to share his opinion that conditions corresponding to schizophrenia in adolescence or young adulthood were not satisfactorily described before the 19th century.

The *Magazin zur Erfahrungsseelenkunde* (Journal of Empirical Psychology), published from 1783 to 1793, presented more than 100 neuropsychiatric case reports. Descriptions of ten male and three female patients are highly suggestive of early-onset schizophrenia, even if editorial interest led to an overestimation of aggressive features (case 2).

Case (1). Lady N . . . tz's younger sister, who was 38 or 39, had been mentally disturbed since the age of 15. For days or weeks she used to behave reasonably well, but then she repeatedly lost her mind for many months: she used to sing religious songs, to converse with her (non-existant) lovers, or to sit uncomfortably on a chair without moving for days. In 1759 she survived a fire in her hometown. Afterwards she again wore her bizarre coat and cap, fell back into insanity and never returned to normal . . . (Anonymous, 1785).

Case (2). Rau, born 1748, studied theology in Leipzig. The Bible, especially the revelation of St John, stirred his imagination, so that he claimed to be infallible. Intolerant towards others, he became more and more withdrawn. In 1779 he killed his father with a knife. He insisted he had not murdered his father, but a Jew and an old Turk. During a storm he claimed that the "wild prince" was coming, and that he had "heard that evil spirit so often". He claimed to be a state prisoner, who must not be treated so hard... (Gruner, 1789).

These strongly condensed translations only yield a dim impression of the original vivid and lengthy reports. They may perhaps cast some doubt on the issue that hallucinatory voices did not vex schizophrenics before 1800.

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SIR: I was intrigued to read some of the observations of Hare (*Journal*, October 1988, **153**, 521–531) about accounts of schizophrenia in the late 18th century. It is noteworthy that frequent, good descriptions of schizophrenia (and several other chronic mental illnesses) first appeared when there was a change in the selection of cases for publication, combined with improved methods of case description. This change probably explains the appearance of these descriptions.

The only description of cases of chronic madness from between 1750 and 1810 are those of Thomas Arnold (1782), who only quotes cases from classical authors, Perfect (1787), Haslam (1798, 1809) and Ferriar (1810). The other published case histories are all of people who recovered. They were published by private madhouse proprietors, who were not keen to publicise their failures. This 100% recovery rate shows that most of the published cases do not form a representative sample of the mental illness then prevalent, especially when compared with the cure rates contemporarily advertised of 30%.

Only about 25% of the large series of cases cited by Perfect (1787) were chronic. These chronic cases appear to have been published to illustrate points that Perfect wished to illustrate, such as the dangers of inexpert treatment with mercury, his skill with healing severe wounds, and the danger of trusting lunatics. Despite this, at least two cases he cites could be examples of schizophrenia (cases 8 and 36).

Chronic cases were first cited in quantity by Haslam and Ferriar, who both worked in charity asylums. The cases cited in Haslam's 1809 edition that are generally accepted to be probable cases of schizophrenia were copied from the 1798 edition (e.g. cases 16 and 23 in both editions), and some of these cases had been admitted 30 years earlier. Unfortunately, Haslam's series of cases must have been biased towards organic cases because it is a series of post-mortems. Ferriar's case descriptions were very brief, and therefore of limited use.

Interestingly, the classificatory systems of mental illness that were published during this period all have categories that would accommodate modern images of schizophrenia: Arnold (1782) in his description of *Ideal insanity*, which includes people who imagine they are conversing with imaginary people, but who are not delirious; Cullen (1810) in his group of *Manias* (and in his classification of *Paracusis imaginaria* – where the sounds are not existing without, but are excited by internal causes, and are distinguished from false hearing); and Darwin (1801) in his species *Mania mutabilis*.

Regarding Harper's claim that insanity was not common in young persons: it is noteworthy that this was part of his argument that insanity was not due to brain disease, but to nervous stimulation and the retention of secretions such as semen. This was a highly unusual view for the period. This compares with the fact that the cases described by Perfect, Ferriar, and Haslam were frequently young.

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## Elementary, My Dear Freud

SIR: I rise to defend Rollin (*Journal*, August 1988, **153**, 241–242) against the unjust criticism of Johns (*Journal*, November 1988, **153**, 712), who uses a succession of specious arguments. Firstly, Dr Johns quotes and implicitly agrees with Holmes' remark that "It is a capital mistake to theorise before one has data". At a stroke, one of the lynchpins of the scientific process is dismissed. Normally, a null hypothesis is formulated and data is collected to reject this null hypothesis. Sherlock Holmes may be excused his position because tests of significance and modern hypothesis testing had not been developed in Conan Doyle's day, but there is no such excuse for Dr Johns.

Secondly, Dr Johns sweeps aside the practice of making assessments of both fictional and historical figures, and states that if such assessments lead to a diagnosis, it "is to severely debase the term". On the contrary, it is perfectly legitimate to consider the maladies of such personages. The medical and literary world would be impoverished if discussion of Beethoven's deafness or Hamlet's madness were dispensed with. In addition, Dr Johns has a particularly narrow view of literature when he says, "Our appreciation and enjoyment... are not increased by psychiatric post-mortems". Indeed, one of the purposes of literature is to encourage us to think, and I wonder if Dr Johns is familiar with the myriad volumes written on literary criticism, much of which deals with psychological issues and which by its very nature is a 'post-mortem'.

Sherlock Holmes may well show features of obsessional neuroticism, and Dr Rollins adduces convincing textual evidence to support his case. Dr Johns' comment that "He complained of no mental illness" is insufficient to disprove Dr Rollins' interpretation. It is well known that there are those who have psychiatric symptoms but deny them, and so the concept of insight seems to have escaped Dr Johns.

Not only are Dr Johns' arguments flawed but so also is his English. As an example, the following sentence defies comprehension: "Lest anyone thinks I am unduly critical of a pleasant literary piece, the Sunday Times of 21 August commented on the article under the headline 'He was quite a case' ". It is clear that Dr Johns would benefit from a greater study of the arts not only to elicit a more mature response to literature, but also to improve his English.

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## CT Studies of Schizophrenia

SIR: The interesting findings of Smith *et al* (*Journal*, 1988, **153**, 667–674) stimulated me to look at our computerised tomography (CT) findings in the context of the influence of different control-matching in our patient subsamples.

We examined 150 RDC-diagnosed chronic schizophrenic patients from mental hospitals with CT (Mundt, 1985). Due to personnel problems we had to carry out the CT scans in two different centres: group 1 (71 patients) was examined at the Surgical University Hospital, Heidelberg, and group 2 (73 patients) in the Central Institute of Mental Health, Mannheim. Among the CT measures taken were the III ventricle diameters, the cella media index, and the number of enlarged sulci. For both groups of patients, control groups were recruited as coupled pairs matched for sex, age, and skull diameter. The controls for group 1 were taken from the Medical University Hospital, Heidelberg; those for group 2 from selected physically healthy neurotic patients at the Central Institute Mannheim. We used identical restricted exclusion criteria for both control groups. The results of a comparison within the matched pairs differed between the groups: group 1 displayed no significant differences whatsoever between patients and controls; group 2 showed slightly but significantly larger III ventricles in the schizophrenic patients than in the controls.

In order to better understand this inconsistency we used the following procedure: first we compared group 1 and group 2 patients according to age and sex distribution; no difference was found. Then we calculated a correction for the matrices of the two CT scans, and corrected all the values for the III ventricle diameters in group 1 and group 2 for both the patients and the matched controls. It turned out that the inconsistency was due to the very different values of the controls; the values for groups 1 and 2 are close, and lie between those for the two control groups. We found that the controls from the Medical Hospital showed larger ventricles than the selected control group of physically very healthy neurotics from the Central Institute.

These results raise the question of which control-sampling can be considered to be most adequate for a group of chronic schizophrenic patients. Obviously we know little about non-illness-related factors which may influence the width of the III ventricle and other CSF spaces and so contribute to the considerable variance of these measures in the general population.

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## Capgras' Syndrome

SIR: Gibbs & Andrewes (*Journal*, December 1988, **153**, 853) contribute further to the correspondence arising from my paper (*Journal*, July 1988, **153**, 117–118), in raising the importance of distinguishing between delusional misidentification and prosopagnosia. They advance the possibility that Capgras' syndrome and prosopagnosia reflect a similar, or the same, underlying process and comment, quite correctly, that a distinction between the two is that Capgras' syndrome is considered to represent delusional misidentification of familiar others. However, they feel that, "this cannot necessarily be claimed in Dr Lipkin's case, as the presence of an organically-based dementia was established".

While welcoming further interest in these matters, I must ask why Drs Gibbs & Andrewes suggest that the delusional nature of my patient's misperceptions is inconsistent with the presence of her organically-based dementia. (This patient experienced delusional misidentification, not "delusional" in quotation marks as per their letter). There are many organic/systemic conditions in which delusional phenomena can arise and indeed delusional Capgras misidentification also, as mentioned in my original paper.

Drs Gibbs & Andrewes also say in distinguishing between prosopagnosia and delusional misidentification that, "When a labelled photograph of the misidentified individual is provided, prosopagnostics benefit from the label, while individuals with Capgras' syndrome would presumably fail to continue to recognise the individual". My original paper did not mention that this particular patient had indeed manifested delusional misidentification of photographs of her second husband and had not in any way, even before the more florid aspects of her dementing process were in evidence, obtained, as Drs Gibbs & Andrewes put it, "benefit from the label" (of photographs of her husband). Her husband related to me that she had actually torn up several photographs of him which had been on her dressing table at home, saying that they were not of him, but of an identical imposter, even though other people (whom she seemingly trusted and did not misidentify) had told her otherwise.

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## Unitary Models of Schizophrenia

SIR: I read with interest the article by Frith & Done (*Journal*, October 1988, **153**, 437–443). About three years ago I formulated a unitary view on the aetiology of schizophrenia (*Journal*, August 1986, **149**, 245). Briefly, I thought that some individuals are genetically determined to have weak and vulnerable dopaminergic systems. When subjected to stresses, some of the neurons on which dopaminergic afferents make synaptic contact cease to function. To compensate for the loss, the dopaminergic fibres give off additional nerve terminals and form new D2 receptors. This overreaction gives rise to a relative increase in dopaminergic activity, and manifests itself as the positive symptoms of schizophrenia. In mild cases, the dysfunction is self-limiting and the dopaminergic transmission is able to return to its previous level of functioning, and the process is completed. This psychotic episode is named a schizophreniform reaction. In more severe cases, the dysfunction becomes chronic and progressive. It results in the actual degeneration of the dopaminergic pathways. Negative symptoms occur when the degeneration becomes extensive and when the mesocortical dopamine system is involved. But then how could this cessation of neuronal function and actual degeneration have occurred? The recent studies on the NMDA receptors may provide some clues.

The excitatory amino acids (glutamate, aspartate) act on the NMDA and non-NMDA (kainate, quisqualate) receptors. The non-NMDA receptors, when stimulated, generate fast depolarising responses until a certain level of membrane potential is reached, and then the NMDA receptors are activated. The NMDA-induced current is longer in duration, and $Ca^{2+}$ ions enter along with $Na^{+}$ through the ion channels. Activity of the NMDA receptors are found to be responsible for plasticity in the developing and mature CNS and long-term potentiation (LTP) in the hippocampus. In the event of prolonged and excessive stimulation, excitotoxicity comes into play when there is too much glutamate and too much calcium. It results in nerve cell damage and death. When the neurons are briefly exposed to glutamate, the cells swell transiently and then go on to recover, but when influx of calcium also occurs, the cells slowly degenerate. This excitotoxicity is postulated to be the cause of degeneration in cerebral hypoxia and ischaemia and in some neurodegenerative disorders such as Huntington's disease and Alzheimer's disease.

The excitatory amino acids are major transmitters of cortico-cortical, corticofugal and sensory systems. Corticofugal pathways run from the cortex to the basal ganglia (nucleus accumbens and caudate/putamen), the hippocampus and the dorsal lateral geniculate, the parts of the brain where highest level of NMDA receptors are found. The striatal NMDA receptors are located on the heads of the dendritic spines of the striatal nigral projection neurons. Synaptic transmission in these pathways is blocked by glutamate antagonists. The non-competitive antagonist of NMDA receptors which act at the receptor-operated ion channels is particularly interesting, because it includes phencyclidine and chlorpromazine, which have psychotomimetic and antipsychotic properties respectively.

It is possible that during severe psychosocial stresses the excitatory amino acid pathways are over-stimulated, which leads to an increase of glutamate transmission and calcium influx. This results in excitotoxicity effect on the striatal neurons where NMDA receptors are located. This in turn activates the dopaminergic pathways which synapse on the dendritic neck of the same neurons. This overreaction and degeneration lead to the schizophreniform reaction and chronic schizophrenic process as mentioned earlier, depending on the severity of the damage done and the vulnerability of the dopamine system.

According to this hypothesis, NMDA antagonists and calcium channel antagonists may be effective in preventing the progression from acute to chronic schizophrenia. Yet non-competitive NMDA antagonists such as MK 801 and phencyclidine are found to have psychotomimetic effects. The possible reason is that when the NMDA ion channels are blocked, there is increased transmission through the non-NMDA receptors as well as activation of dopamine-containing elements in the striatum. More research in this area is awaited.

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Sir: Frith & Done (*Journal*, October 1988, **153**, 437–443) provide an elegant account of the symptoms of schizophrenia in relationship to the self-monitoring of actions. The positive symptoms are regarded as a failure of monitoring, because of the degradation of information about willed intentions. In contrast, negative symptoms are associated with a difficulty in forming willed intentions. I would suggest that such an explanation is both faulty and unneccesarily complicated.

The concepts of 'the will' and 'intention', and the associated 'act', are notoriously problematic. (What is an 'act of will' in this context?) Nevertheless, if we in some form accept the existence of 'willed intent' we readily recognise Drs Frith & Done's suggestion that this in some way fails in the schizophrenic with negative symptoms. However, does it not fail in all of his actions, whether generated from stimuli or from a willed intent? The inability of social stimuli to generate 'normal' and acceptable behaviour is a familiar problem with such patients. Furthermore, we know that the acutely psychotic patient can be disinhibited and also fail to respond to social mores. We therefore have to elaborate the theory, perhaps by arguing that such patients are unable to understand these stimuli. Alternatively, we can make the much simpler statement that all schizophrenics have potential difficulty in forming 'willed intentions' for all kinds of acts. Or should we merely reassert Bleuler's contention that ambivalence of the will is a fundamental symptom of schizophrenia?

Considering now the positive symptoms, the theory has the advantage of describing percepts, beliefs, and emotions as irreducible mental events. "First rank symptoms are essentially abnormal experiences and do not necessarily result in obvious changes in behaviour." It thus becomes easier to understand the fact that a psychotic patient can experience such phenomena at the same time as experiencing both the real world and other people's reactions to him; and that he can use any combination of phenomena to inform his actions. Furthermore, 'insight' can also be seen as a process separate to this event. It can be understood within the context of Drs Frith & Done's theory as the appraisal of the correlation of this mental event with reality, by a further monitoring system (which may or may not be intact).

However, having accepted such mental events as irreducible, and subject to monitoring systems, how should we classify these events? It seems straightforward to classify physical actions (and the preceding neural activity within the motor cortex) as 'acts', subject to the constraints outlined above. It seems less easy, but possible, to classify thoughts as 'acts'; we are given a helpful quotation from Piaget: "thought is internalised action". However, it does not seem possible to classify percepts (or hallucinations), beliefs (or delusions), and emotions as actions. Drs

Frith & Done avoid this in part by flaunting the convention of classical phenomenology and attributing hallucinations to thoughts, rather than treating them as percepts. If they do accept hallucinations as percepts then they themselves would place this phenomenon in a category entirely separate to actions, and rightly so, since the notion of 'willing' a percept is not convincing. (One may will an image, which is why percepts and images are entirely distinct experiences.) Is a belief an 'action'? A belief is a predisposition to act. The associated mental 'action' is the thought which is used to rehearse the belief. Is an emotion an 'action'? Anyone who has been unable to change their feelings but has been able to change their actions could describe the difference, and would say without doubt that emotion is most definitely not the result of 'willed intent'.

I would therefore suggest that physical actions and thoughts do have a willed intention, although this is rarely conscious outside of situations of conflict. However, percepts, beliefs, and emotions are not produced by willed intention – other than those intentions of which we are as unconscious as the schizophrenic person. These irreducible mental events are different both from actions and from each other. The Frith & Done theory thus succeeds only as a neuropsychology for the abnormal schizophrenic experiences of the passivity phenomena of thoughts and actions, and the willed intention to think, i.e. *Gedankenlautwerlen*. (The only experimental evidence cited is in fact for the monitoring of motor actions by schizophrenic patients.) It is not convincing for the entirely different experiences of percepts, beliefs, and feelings.

If such events are not willed, where do they come from and how do they arise? We must assume that percepts arise from sensory experiences, and that beliefs and emotions arise from the black box of our consciousness as a consequence of other inputs. They do so in a way that we can make some sense of – i.e. in an 'understandable' fashion. Thus we feel justified in labelling these events, as we do, as our own. Here Dr Frith points out (in my view correctly) that we differ in this way from the schizophrenic person who sometimes fails to achieve correct 'labelling' of these events. I would suggest that this is simply because these events appear to arise *de novo*, not because they are a consequence of unmonitored intentions. They could appear to arise *de novo* because they occur as a consequence of a structural or biochemical abnormality, or because they arise from one's consciousness in an non-understandable way – presumably for the same reasons. Given their non-understandable origin, these events will sometimes be recognised as 'not of self' (i.e. not arising from one's own consciousness). They will then be (incorrectly) attributed to externally generated sensations, producing hallucinations, or to external agents, producing the passivity phenomena of sensations and feelings. They could also be attributed to thoughts and actions, allowing one to abandon the faulty internal monitor altogether. Sometimes they will be accepted as 'of self', resulting in delusions which are accorded the same special status as religious insights: not arising from data from the outside world, and therefore not requiring testing against it. If 'will' or 'willed intention' is yet another mental event, there is no reason why these should not also arise apparently *de novo* in the schizophrenic person, thus creating conflicting wishes and intentions, and the ambivalence of the will.

Such a hypothesis draws directly on the theories of Hughlings Jackson: any cerebral lesion results in negative symptoms, due to loss of tissue, and to positive symptoms, since loss of tissue results in the 'release' of other areas of the brain. It is both more parsimonious than that offered by Drs Frith & Done, and in line with the traditional phenomenological and philosophical understanding of such mental events. It explains how pathological, physiological, and biochemical changes at almost any level of the central nervous system can result in psychotic phenomena of any sort, in any illness, simply because they can produce these mental events. It seems superfluous to invoke a final common pathway through an 'internal monitor'. Schizophrenia may well be a distinct illness, but it is not its capacity to cause psychotic phenomena that makes it distinctive.

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SIR: I would like to add to the model of Drs Frith & Done by putting forward some ideas derived from my interest in artificial cognition. Hofstadter (1982) has pointed out that thought has a monitoring quality with increasing levels of abstraction and breadth of observation. He likened this to a mathematical regression, but pointed out that the regression is not infinite as the self-watching nature of a monitor at some level of abstraction detects infinite, or even mildly repetitive, patterns of thought. The lowest level of monitoring would be the conscious channel through which our thoughts run, analogous to a central processing unit (mainly processing, little abstraction), and the equivalent of the comparator of Gray (1981). I propose changing the schema illustrated by Drs Frith & Done in their Fig. 1 by suggesting that willed intention and stimulus intention are themselves monitoring units, but with a higher level of abstraction. My model would have a number of levels of monitoring, progressing upward from conscious thought, through willed intentions, on through plans and ideas to the most abstract of concepts. My way of illustrating this would be to suggest that as one progresses up to higher levels of monitoring, the process or energy of thought ceases to have a sequential characteristic like an action potential sweeping along an axon, and becomes a deforming force acting on the plastic boundaries of concepts, like a huge Venn diagram in which the lines are driven to break, merge, and reform. At some level the nature of thought, and the nature of a concept, with all its fluidity, become inseparable.

I believe that the lesions in schizophrenia lie at a higher level than Drs Frith & Done suggest, in the feedback and feedforward mechanisms of a specific subsystem. My model could be used to account for the variability in clinical manifestations and complete psychopathology of schizophrenia. Frith (1987) described negative symptoms as a response to positive symptoms, but I believe Crow's (1980) concept of two separate constellations of symptoms, type I and type II, which may or may not coexist, has validity. I propose that the specific subsystem affected in schizophrenia has a specialised function in rapidly monitoring perceptions, actions, and thoughts personally or directly affecting the organism. This subsystem has a powerful feedback and feedforward channel to and from conscious thought, and is organised at all levels, but its boundaries become less clear as one moves up from conscious sequential thought towards concepts relating to the self. The most abstract level I can conceive of is that of feelings. It is easy to see the evolutionary advantages conferred by a specialised system constantly alerting us to, and processing, information relating to personal hazard or advantage. The operation of this subsystem within my own brain suggests that it identifies and processes the various aspects of an 'Appening Directly Affecting Me, or ADAM, hence the ADAMs subsystem.

My model of schizophrenia proposes a breakdown in the transfer of information from the lowest level, conscious thought monitor into and out of the ADAMs subsystem. Owing to the increasing blurring of boundaries at higher levels of abstraction, information can enter the subsystem at higher levels (i.e. idea and concept levels), but the information is then more vague, has come through inter-related ideas and concepts, and is not easily identified as being related to an internal or external ADAM.

I postulate that positive symptoms of schizophrenia result from defective feedforward from the ADAMs subsystem, and negative symptoms from defective feedback into the same subsystem. For example, to act is a concept which activates ideas, plans, and intentions, resulting in information passing through consciousness, and on to the action itself. If the process as perceived by the conscious monitor lacks input from the ADAMs subsystem, then it is experienced as an act with no personal component, and is thus interpreted as control by an outside force. Frith (1987) gave examples of thinking leading to the experience of thought insertion, switching attention leading to delusions of reference, and subvocal thought leading to auditory hallucinations or thought broadcasting. Using my model the equivalent processes occur, but in addition negative and other symptoms can be explained. If the feedback link (from the conscious monitor into the ADAMs subsystem) fails to operate, then perceptions do not activate the cluster of ideas and concepts relating directly to the self. If the highest conceivable level of abstraction within the subsystem is that of feelings, then it can be seen that the likelihood of information reaching this level is diminished, the failure being manifest as poverty of affect. In fact, some information may diffuse into the ADAMs subsystem via the fuzz that surrounds related concepts, but it can be seen that the relationship to the original perception may be tenuous, and even based on the readily available concept of oppositeness. Thus, inappropriate, labile, or shallow affect may be seen as the result. Since it is an important function (for survival itself) of the ADAMs subsystem to direct attention to happenings that might personally affect one, it can be seen that a failure in the direct feedback channel from the conscious stream of thought results in woolly shifts of attention from one vaguely related concept to another, a phenomenon manifesting as thought disorder. Lack of volition and poverty of speech can be seen to follow from a failure of the activating, attention-directing function of the ADAMs subsystem when it is starved of direct input. Presumably even the discomfort resulting from catatonic posturing or exhaustion resulting from catatonic excitement can lack a personal component, and thus fail to activate an appropriate self-preserving response.

Information-processing models of mental illness are probably the models that will be developed and extended in the next few years, and since the development of new models requires conceptual jumps it is impossible to say what impact they may have on our future practice. It is important for us to keep our minds open to new ways of conceptualising the mind and its malfunctions; we must be prepared to delve into the psychological insights of researchers working in the superficially dry fields of information processing and artificial cognition.

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## Self-rating

SIR: McLaren (*Journal*, November 1988, **153**, 708) regards an individual's rating of himself (as either good or bad) as irrational and self-defeating. Certainly the concept of overall or global self-esteem does not make sense in the context of contemporary society. However, it does make sense in the context of evolutionary biology (*Lancet*, 1988), and it may help us to lead people away from the harmful tendency to rate themselves globally if we understand why this self-evaluative behaviour might have evolved.

The development of high or low global self-esteem may be seen as a preparation for crucial situations in which decisions have to be made between self-assertion and self-effacement. High global self-esteem is a strategy for self-assertion, low global self-esteem a strategy for self-effacement.

It is likely that the capacity for both high and low self-esteem is present in everybody at birth, the selection of strategy being made at predetermined stages. Crawford (1987) made a useful distinction between *developmentally contingent strategies*, in which the selection is made early in life, long before the strategy has to be 'played', and *concurrently contingent strategies*, in which the selection is affected by factors operating at the time of the 'play'. In human beings it seems likely that the level of self-esteem which determines the decision between self-assertion and self-effacement in any adult situation is both developmentally and concurrently contingent.

A developmentally contingent low self-esteem strategy may be inculcated by parents in one or more of their offspring (by withholding praise or administering punishment) as part of an evolutionary parental strategy in its own right; or it may be imposed by other adults, such as teachers, as a form of inverse nepotism; or by older siblings to whom it may be an advantage for younger siblings to be predisposed to self-effacement; or it may be selected in the self-evaluative rough-and-tumble of childhood or the adolescent peer-group. These individuals, who are familiar to us in our clinical work, enter and endure adult life with chronic low self-esteem which is often very resistant to treatment.

In other patients we can identify a concurrently contingent low self-esteem strategy in the form of a depressive state. Some people respond to stress with elevation of mood, giving them enhanced vigour and competence associated with a rise of self-esteem; others respond with a reduction of mood, giving them reduced vigour and competence associated with lowered self-esteem. Either strategy is effective at dealing with the prototypical interpersonal stress situation in which two equal adversaries are in competition and neither will give way – a situation which we share not only with other primates but with all other vertebrates. In humans the environmental factors will be more complex than in animals, and will almost certainly involve the acquisition or loss of allies, so the proximate causation may well be one of loss rather than of manifest competition.

The view of depression as a concurrently contingent low self-esteem strategy is not in conflict with other causative theories of depression, whether they be psychoanalytical, behaviouristic, neurophysiological, or biochemical; nor is calling depression a strategy in conflict with its conceptualisation as disease, reaction, or posture (Hill, 1968). It is merely adding the perspective of ultimate (evolutionary) causation to those methods which seek to analyse proximate (immediate) causation.

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## Pre-pubertal Depressive Stupor

SIR: I read with interest the case report of pre-pubertal depressive stupor (*Journal*, November 1988, **153**, 689–692). I reported a similar case several years ago (Warneke, 1975). This patient was first admitted in a depressive stupor at the age of 12 years. He was initially admitted to a pediatric service where a viral encephalitis, among other things, was suspected. A comprehensive neurological workup was negative, and the stupor resolved with time and supportive care. However, the patient was re-admitted at the age of 14 years to a psychiatric service under my care, clearly exhibiting signs of classic mania. During a prolonged hospital stay, the clinical state changed to a depressive stupor, resolving quickly with the use of electroconvulsive therapy. The patient eventually left hospital and was stable on lithium, although he had subsequent re-admissions in the following years. There was a strong family history for affective disorder. The results of the dexamethasone suppression test would have been interesting; however, the test had not been adapted for use in psychiatry as yet.

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## Multiple Personality Disorder

SIR: Fahy's thorough review of the literature on multiple personality disorder (MPD) (*Journal*, November 1988, **153**, 597–606) reveals an ambivalence which makes us wonder whether the author has actually recognised and treated MPD cases. He acknowledges the fact that typical MPD symptoms such as psychogenic amnesia and alterations in behaviour, attitudes, and taste are presented before contact with a clinician is established and before hypnosis is used. He correctly criticises claims that MPD is an iatrogenic disorder. Yet, referring to the rise and fall of hysteria at the end of the 19th century, he downplays its existence as a separate syndrome. He states that supporters of the diagnosis point to the wide distribution of cases in time and place, but that this distribution no longer extends outside the USA.

Dr Fahy's historical review overlooked an important European source. A century ago, the French psychiatrist Pierre Janet conducted a series of careful clinical studies on hysteria (Janet, 1889, 1901, 1907). He regarded hysteria as a broad class of mental disorders which had a dissociative foundation in common, and were in many cases related to traumatic experiences. Hysteria included somatisation disorder, conversion disorder, psychogenic amnesia, psychogenic fugue, MPD, and certain other syndromes with predominant dissociative features. Characterising MPD as having distinct alter-personalities with their own sense of self and their own life history, and having different patterns of amnesia between these personalities, Janet clearly regarded MPD as a separate syndrome.

As Dutch clinicians working in a psychiatric outpatient clinic, we are currently treating 15 MPD patients, and in consultation and diagnostic interviews we have seen many more. In conformity with the findings of American research studies, all of these patients had a severely traumatised childhood, had been known to psychiatry for many years under widely divergent diagnoses, and had not benefited from conventional treatment approaches. In our experience, they generally respond favourably to MPD-specific treatment. MPD is clearly not an American disease, but our American collegues are worthy of our praise for refocusing attention on a disorder which has not had a fair chance in psychiatry.

We agree with Dr Fahy and others that DSM–III and DSM–III–R criteria for the diagnosis of MPD are vague, especially with regard to the definition of personality. Many of the patients to whom we would give the DSM–III–R diagnosis of 'dissociative disorder not otherwise specified' are perhaps seen as MPD cases in the USA. A more rigorous set of diagnostic criteria is urgently needed. Although MPD often coexists with other Axis I and Axis II disorders, we disagree with Dr Fahy's conclusion that MPD has arbitrarily become the primary diagnosis and that MPD symptoms do not justify a final diagnosis. The most important reason for giving the MPD diagnosis priority is that in otherwise intractable cases, apt treatment can be provided.

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## Lofepramine-induced hyponatraemia

SIR: We would like to report a 74-year-old spinster who developed hyponatraemia while receiving lofepramine.

Psychotropic drugs were first implicated with the syndrome of inappropriate secretion of anti-diuretic hormone (SIADH) by Luzecky *et al* (1974) in a patient receiving amitriptyline. This has been noted on six subsequent occasions with this drug, and further reports of SIADH in patients receiving imipramine (2 reports), desipramine (3 reports), carbamazepine, clomipramine, nomifensine, dothiepin, and tranylcypromine have been published.

*Case Report:* This patient was admitted after a two-month history of manic-depressive psychosis – depressed type. She had been treated with amitriptyline (50 mg b.d.). There was a history of three previous episodes of depression which had responded to antidepressant medication or ECT.

On admission her sodium was 139 mEq/l. She was also noted to be anaemic, this being attributed to long-term therapy with ibuprofen. Her medication was changed to lofepramine (rising to 210 mg/day). No change was made to her other medication: atenolol (100 mg mane), lormetazepam (1 mg nocte), and ispaghula husk (Fybogel). Fifty days after starting on lofepramine the patient was noted to be becoming anorexic, weaker, and confused. Her sodium was noted to have dropped to 121 mEq/l. The serum osmolality dropped to 250 mOsm/kg (normal range 275–295), and the urine osmolality rose to 519. There was no evidence of intoxication. Physical examination was unremarkable. Chest X-ray and midstream specimen of urine was normal.

Fluids were restricted to 1 l/day, the lofepramine stopped, and trazodone commenced. Eventually the sodium returned to normal values (139 mEq/l), and the serum osmolality rose to 276 mOsm/kg. She later went on to respond well to a short course of ECT.

We feel that this patient fulfilled the criteria for a diagnosis of SIADH according to the criteria of Bartter & Schwartz (1967). She had hypo-tonicity of the serum, with a low sodium level and inappropriately elevated urine osmolality. The urine sodium and arginine-vasopressin were not measured. There was no clinical or biochemical evidence of cardiovascular, liver, renal, or adrenal disease, nor of dehydration. There was no report of recent head injury. Re-exposure of the patient to lofepramine was not done on the grounds of the patient's poor clinical condition. Hyponatraemia may occur acutely in psychiatric patients due to the psychosis itself (Rasking *et al*, 1975), secondary to compulsive water drinking (Chinn, 1974), or as a result of psychotropic medication.

The Committee on Safety of Medicines have received four reports of antidiuretic disorders possibly related to lofepramine. The manufacturers, E. Merck Limited (pers. comm.), have received two reports of hyponatraemia in patients receiving lofepramine. The first published report describing the possible association was by O'Sullivan & Oyebode (1987).

The effect noted is probably drug-specific to the patient and not to the drug class, as most reports show patients unaffected when treated with an alternative drug either before or after the implicated drug.

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## Munchausen Syndrome Masquerading as AIDS-induced Depression

Sir: The psychiatric disorders associated with AIDS have been well documented (Fenton, 1987), and cover the breadth of psychiatric nosology. We describe a case of the Munchausen syndrome presenting with the fallacious claim that the patient had AIDS. To our knowledge this particular psychiatric association has not been previously reported.

*Case Report:* A 32-year-old unemployed seaman presented to the casualty department complaining of depressed mood, early morning waking, poor appetite, loss of concentration, weight loss, and a voice telling him to kill himself. He said these symptoms had begun when, a few months earlier, he had contracted pneumocystis carinae pneumonia and been informed that he was HIV positive as a result of his long-term intravenous drug abuse.

He was admitted to a psychiatric ward and gave a similar history, but with some differences in the timing of events. Suspicion was aroused when it was discovered that he was not known at the address he had given nor at hospitals to which he claimed to have been admitted. The hospital at which he claimed to have been diagnosed HIV positive refused to give any information as a matter of policy. The GP he had quoted had retired a year earlier and was untraceable.

The patient had a number of tattoos, and was eventually identified with the help of a merchant shipping company who kept records of employees' distinguishing marks. With this information it was ascertained that the patient had a criminal record and had been admitted to many hospitals using at least five aliases, usually presenting with haemoptysis, both in this country and abroad. He had recently been deported from Holland.

He was finally persuaded to have an HIV test. It proved negative, and the patient was confronted; he admitted using a false name (the name of a Liverpool footballer), and agreed to give his real name, giving the name of another Liverpool footballer. He was discharged.

Throughout his admission the patient was treated cautiously, in case he did have AIDS or a psychiatric condition causing him to believe he had AIDS (Miller *et al*, 1985). This case, we believe, represents a particularly difficult and disruptive variant of Munchausen syndrome, because AIDS induces great anxiety in the staff involved with the patient's care and requires the institution of recommended precautionary measures (Fenton, 1987). In view of the special attention to the patient and the sympathetic approach required, one might expect AIDS to appeal to Munchausen patients. In this case, a fairly typical example of the syndrome, the disruption caused was maximised by our particular difficulty in finding any information about the patient. This surely adds further weight to the argument for a centralised register of Munchausen patients to allow earlier detection (Jones & Horrocks, 1987).

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MILLER, D., GREEN, J., FARMER, R. & CARROLL, G. (1985) A pseudo-AIDS syndrome following from fear of AIDS. *British Journal of Psychiatry*, **146**, 550–551.

## Corrigenda

*Journal*, December 1988, **153**, 850 (R. J. Russell). On the fifth line, "current" should read "voltage".

*Journal*, September 1988, **153**, 355 (R. Manchanda *et al*). On the third line, "... patient (see Fig. 1, patient 1)" should read "... patient (their patient 1)".

*British Journal of Psychiatry* (1989), **154**, 422–425

# *Reading about . . .*

## The Split-Brain Syndrome

A recurrent theme in psychiatry is the belated and often confused appreciation of advances in other relevant disciplines. An example of this is the "split-brain syndrome", which provoked a Zeitgeist in the kindred field of neuropsychology and which has shaped notions of mental functioning impinging on the domain of psychiatry as well as philosophy, aesthetics, and education (Benson & Zaidel, 1985). The 'left brain – right brain story', while giving rise to much creative scientific enquiry, has also spawned some rather dubious psychophantasy. The purpose of this article is therefore to summarise this vast and growing body of work, to highlight areas of particular relevance, and to steer the reader away from the more wayward regions of speculation.

### History and Background

The function of the corpus callosum, the band of over 200 million nerve fibres which connect the cerebral hemispheres, has been the subject of considerable argument for more than 100 years. Whether it had any function at all save as a form of brain scaffolding was a serious question until less than 30 years ago (a view supported by the apparent lack of consequences following callosal transection reported by the neurologist Akelaitis in the 1940s (Bogen, 1985)). By the 1950s, however, Roger Sperry and Ronald Myers had shown in animal experiments that by severing this tract, information presented exclusively to one hemisphere via the opposite visual field remained unavailable to the other hemisphere. When neurosurgeons Philip Vogel and Joseph Bogen decided to resurrect commissurotomy, or the "split-brain operation" (dividing the callosum, and the anterior and hippocampal commissures) to control intractable epilepsy, Sperry and his new assistant, Michael Gazzaniga, at the California Institute of Technology were keen to find out whether they could demonstrate the effects of disconnection in man (Gazzaniga *et al*, 1962; Gazzaniga *et al*, 1965). At the same time, Norman Geschwind and his colleagues in Boston, from a tradition in neurology stretching back to Dejerine and Liepmann at the turn of the century, described the syndromes of naturally-occurring lesions of the corpus callosum (Geschwind, 1965). Armed with the knowledge and apparatus developed from primate commissurotomy work, the effects of the surgery were found this time to be dramatic and compelling. An object placed in a subject's left hand could not be named (by the right cerebral hemisphere), although it could be retrieved from an array. The same object could be named easily when placed in the right hand. The right hand could write but not draw, while the opposite pertained with the left hand (Bogen, 1969). A picture presented for a fraction of a second (tachistoscopically) in the right visual field (left hemisphere) could be named and matched, but when presented to the opposite hemifield, the subject claimed not to have seen anything, yet could again select the corresponding object from a range of choices. Studies in other sensory modalities confirmed these findings and established the dual notions of lateral specialisation and relative hemisphere independence (Sperry, 1968, 1984), i.e. that both left and right hemispheres are endowed with complementary skills. Sperry (1984) summarised this as follows: "Each hemisphere can be shown to experience its own private sensations, percepts, thoughts and memories that are inaccessible to awareness in the other hemisphere . . . each . . . appears to have a mind of its own."

This endeavour was extended by a whole generation of talented psychologists using ever more ingenious techniques. Visual chimeras, pictures consisting of the right half of one drawing and the left half of another, were used, with each half of the composite stimulus having two possible matches, either by function or appearance (Levy & Trevarthen, 1976). The results elegantly revealed the reciprocal preference and predisposition, often called cognitive style, of each side of the brain. Another breakthrough followed the development of a contact lens system whereby visual input could be maintained in one half field long enough to elicit the full range of linguistic capabilities of the right hemisphere (Zaidel, 1978). In the meantime, Gazzaniga moved to the East Coast of America and continued his research on two new series of patients operated on by Donald Wilson and Mark Rayport, using a more limited procedure confined to part or all of the corpus callosum, callosotomy, which seemed to reduce the morbidity of the surgery without reducing efficacy. Another series has recently been reported from Yale (Spencer *et al*, 1988). The impressive body of knowledge gained by Sperry and associates led to the award of the Nobel Prize for Physiology and Medicine in 1981. Current research centres around such issues as how representative are the findings on such a small and decidedly unusual group of individuals? In what ways are the hemispheres truly independent (Zaidel, 1987)? How are resources allocated within and between the hemispheres (Gazzaniga, 1987)? Can information be transferred subcallosally (Sergent, 1987)? Is the callosum excitatory, inhibitory, or both (Cook, 1986)?

## Dichotomania

In an effort to characterise the fundamental differences between the two hemispheres, a vast range of dichotomies have been advocated (Bradshaw & Nettleton, 1981). The verbal/nonverbal and dominant/minor distinctions have been ushered out by the split-brain work, only to be replaced by other contrasting attributes of marginally greater explanatory power. Favourites include analytic/gestalt, serial/parallel, rational/intuitive, etc. (Springer & Deutsch, 1985). Some of these models may be of heuristic value and serve to draw attention to the possibility that we may have talents and abilities which – like the capacities of the disconnected right hemisphere – may be overlooked (Bogen, 1975). This is quite distinct from the appealing proposition that each one of us has a poet, inventor, or composer of genius, hidden in the recesses of our unused brains, locked away by the narrow materialism of Western 'left brain' society (Prince, 1978; Edwards, 1979). These latter notions have little in common with academic split-brain research, other than perhaps their shared origins in California. Geschwind & Galaburda (1985) have argued with typical verve that cerebral laterality is a culmination of the asymmetries which pervade the whole of nature, a (left-handed) twist of fate encoded in the DNA helix, or perhaps reducible to the orientation of sub-atomic particles!

## Split brains and split minds

One other dichotomy which has crept into this discussion is that of unconscious/conscious, representing right and left hemispheres respectively. It has grown out of a few oft-repeated anecdotes from observations of split-brain patients. For example: "One flashes a series of pairs of pictures to right and left visual fields . . . Into a series [of] neutral stimuli one then flashes a vivid pin-up shot of a nude that projects into the minor hemisphere only. At the same time a horse . . . appears on the right side. The subject says, of course, that she saw a horse . . . But then you notice that a kind of sneaky grin has begun to spread over the subject's features . . . If you ask her what she is grinning at, she does not know and says, 'Oh, that light.' " (Sperry & Gazzaniga, 1967).

Does the subject really not know, or is the instinctual right hemisphere knowledge 'repressed' by the censorious left hemisphere 'superego'? Psychiatrist David Galin (1974) has marshalled an impressive literature supporting the view that the phenomenon of dissociation may arise from the actual separation of mental events across the corpus callosum. Freud's attempt to locate his psychic topography in neuroanatomy, the "Project" of 1895 (Freud, 1895), has been found to fit comfortably into phylogenetic models of brain development. In this scheme, the 'primitive' regions that make up the limbic system have been superceded in man by higher cortical structures, so that aggressive and sexual drives are controlled and steered in socially acceptable directions (see McLean, 1985). This hierarchical, horizontal splitting has given way to the more democratic view that some of these drives may not only be adaptive but may also be creative and equally 'civilised'. A metaphorical vertical split could therefore be invoked to conceptualise a separation of these attributes from rational and verbal faculties. This is another reflection of the elevation of right hemisphere functions in neuropsychology, and has parallels in psychoanalysis, particularly in the writings of the post-Freudian, Melanie Klein.

Some aspects of dissociation are amenable to empirical testing. For example, in one split-brain patient the inability to name objects in the left hand was attenuated by hypnosis implying *increased* interhemispheric communication (McKeever *et al*, 1981). The suggestion that the 'primary process' dream world is the province of the right hemisphere (Hoppe, 1977) has been challenged by the finding that split-brain patients experience dreams during REM sleep which, like normals, they can recall on being woken. This implies that at least some dreams are available to the speaking left hemisphere (Greenwood *et al*, 1977). The controversial syndrome of multiple personality, where not feigned, is probably an extreme form of dissociation (Fahy, 1988). Some authors have taken Sperry's notion of the two hemispheres having "separate streams of consciousness" (Sperry, 1968) to an extreme by postulating that each personality resides in one or other side of the brain. The theory would be somewhat more plausible if it were not for the fact that unlike Dr Jekyll and Mr Hyde, the number of multiples frequently exceeds two! Despite the obvious flaw, it is possible to conceive of this as a scientific version of themes which run throughout history, namely good versus evil, heaven and hell, the magical and the commonplace (see Jaynes, 1976). To go as far as to suggest that these archetypes are an actual product of man's dual brain rather than a convenient hermeneutic explanation for his multifarious nature is rather doubtful. Nevertheless, the idea that each hemisphere may be conscious does question our intuitions about selfhood and identity in profound ways, and has attracted much earnest philosophical inquiry (Popper & Eccles, 1977). Again, the evidence available from studies looking at each hemispheres' view of itself points to a large degree of unification and consistency (Sperry *et al*, 1979). Probing the values and beliefs of each separated hemisphere in one young man revealed high concordance except for career choice, where the left hemisphere chose "draftsman" while the right preferred "automobile racer" (LeDoux *et al*, 1977). Indeed, even the strategy of having one hemisphere play the other at chess failed to produce dramatic conflict (MacKay & MacKay, 1982). It seems that we may have to draw a distinction between having two potentially independent cognitive systems and having two selves.

## Psychiatric consequences of splitting the brain

Careful observation of patients after commissurotomy over many years has failed to reveal any obvious psychopathology. In fact, the most remarkable consequence, apart from mild memory and motor impairment, is their 'social ordinariness'. Where neuropsychiatric abnormalities are present, they are just as likely to be due to prior brain damage and/or epilepsy. One report of six patients before and after callosum section (Ferguson *et al*, 1985) includes brief descriptions of behaviour and personality and concludes that if anything, these parameters were improved. Hoppe (1978), a psychoanalyst, carried out detailed psychodynamic evaluations of patients from the California series and found that they had restricted fantasy lives and were poor in expressing emotions. This apparent "alexithymia", thought to underlie many psychosomatic conditions, has been quantified (Ten-Houten *et al*, 1986), although the validity of the construct has yet to be established and the use of a non brain-damaged comparison group may account for many of the differences noted.

Some striking motor phenomena have been recorded, especially shortly after commissurotomy, which bear a superficial resemblence to the psychotic symptom of passivity, i.e. delusions of influence (see Lishman, 1971). For example, one patient complained that, while attempting to get dressed using one hand, the other hand would busily try to undress him. When another patient was observed assembling a complex puzzle, and "... it was apparent from his facial expression that ... the right hand had performed incorrectly, the left hand ... restrained by the experimenter would sometimes reach out and correct the error." On other occasions, the subject was unable to arrange test items, "... mainly because the right hand would always try to help and would consistently undo the superior accomplishments of the left." (Gazzaniga *et al*, 1965). These incidents, although suggesting a conflict of wills, lacked any of the accompanying delusional elaboration seen in schizophrenia.

## Implications for psychiatric research

In 1844 the eccentric English general practitioner Arthur Ladbroke Wigan came up with the idea that insanity ensued when the two brain hemispheres failed to act together in harmony (Clarke, 1987). This thesis remained largely forgotten until it was reported that the corpus callosum was thickened in the post-mortem brains of schizophrenic patients (Rosenthal & Bigelow, 1972). Following this, psychologist Stuart Dimond applied those techniques he had developed in his studies of the split brain to psychiatric patients (Beaumont & Dimond, 1973). The study stimulated an already growing interest in the influence of cerebral laterality on psychopathology (see Flor-Henry, 1983). There is much debate as to whether the abnormalities detected are due to dysfunction in one or other hemisphere (Walker & McGuire, 1982; Robertson & Taylor, 1987; Cutting, 1985) or the transmission between them (Randall, 1983; David, 1987) and whether the morphology of the corpus callosum is in fact different in schizophrenia (Nasrallah *et al*, 1986).

In conclusion, disorders of mood, motivation, perception, thought, etc., can each be examined in the context of the split-brain syndrome, which offers an exciting new explanatory model. However, researchers would do well to remember the pitfalls open to those who try to explain too much on the basis of one line of enquiry and who wish to simplify the baffling complexity of mental illness.

### Acknowledgements

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# *Book Reviews*

Editor: Sidney Crown

**Psychiatric Pharmacosciences of Children and Adolescents.** Edited by CHARLES POPPER. Washington, DC: American Psychiatric Press (distributed in the UK by CUP). 1988. 161 pp. £15.00.

This volume provides an update on biological aspects of child and adolescent psychiatry. It is always difficult to produce a readable book of selected papers from scientific meetings, and the editor is to be commended on both choice and presentation of material. However, there is no index, making cross-referencing and information retrieval difficult.

The biological basis for, and psychopharmacological management of, psychiatric disorders in childhood and adolescence remains very much a frontier area. The book covers four areas of present scientific knowledge – neurotransmitters, drug deposition, pharmacodynamics, and neurotoxicology – emphasising the developmental issues in each case. These chapters are well-referenced, and provide the interested reader with ample scope for further reading. The inclusion of data on anticonvulsants is particularly welcome. Epilepsy is a major area of concern in paediatric neuropsychiatry too often neglected by developmental scientists and clinicians alike.

Animal models, as well as clinical adult research, are used to illustrate established concepts and consider the issues for childhood either for further research (for example in the emerging area of how early factors in the environment may affect cortical maturation) as well as for current clinical practice in children (such as how recent advances in the disposition and pharmacodynamics of antidepressants may prevent clinicians from underdosing as well as overdosing their patients).

The fifth and final chapter is an interesting and important postscript considering the ethics facing practitioners prescribing psychotropic medications to children and adolescents. It begins with an introduction to the problems of decision-making for the psychiatrist, and continues with a discussion on the dilemmas of consent to treatment. Having to decide on the relative risk of psychopharmacology compared with the hazards of the natural course of an untreated psychiatric disorder which may carry a significant morbidity and mortality risk is an example of one area considered. The argument, however, is not extended to the relative merits of pharmacological and psychological treatments in conditions where both may apply, such as in depression.

At present the enthusiasm for psychotropic treatment reflected in this book needs to be tempered with the lack of adequate clinical trials for treatment in child and adolescent psychiatry. Overall, however, this is an excellent read. It is somewhat expensive, and the absence of an index is regrettable. The book should find its way into specialist libraries and onto the shelves of developmental scientists and practitioners in child and adolescent mental health.

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**Sentenced to Hospital: Offenders in Broadmoor** (Maudsley monographs no. 32). By SUSANNE DELL and GRAHAM ROBERTSON. Oxford: Oxford University Press. 1988. 170 pp. £20.00.

This work was commissioned by the DHSS, presumably with the purpose of helping the Department in its fact-finding and opinion-gathering exercise, leading to a formulation of consistent policies on mentally abnormal offenders, psychopathic disorder, and Special Hospitals. To do the job, the authors interviewed some 230 patients, matching equal numbers of male psychotics and 'non-psychotics' in Broadmoor at the time of their study, and also the consultants then in post. (It is a pity that they did not provide sample questionnaires.)

They are academics, and it shows; there is irritatingly frequent recourse to statistical shorthand, not always readable by a more mature generation of clinicians (what is meant by $chi^2 = 8.45$ 2 df $P < 0.01$?). They also show a rather naive readiness to accept patients' statements at face value – not only those of psychopaths, but those of the mentally ill – when the statements are claims to have simulated or exaggerated symptoms, or are denials of guilt of the admission offences. Any clinician will know that a substantial number of psychotics in remission find it impossible to accept that they have so lost control of the integrity of their personalities that they committed heinous acts, and they then rationalise or lie their way out of it. The authors do not seem to have considered in any detail the background to denial of the offence – hysterical amnesia, amnesia due to severe intoxication or trauma, and in at least one case, to the desire on the part of a paedophiliac, sadistic killer to spare agony to gentle, devoted parents who could not believe his guilt. (When they died, he willingly admitted all, and in due course was discharged.) Throughout the book, too, apart from a couple of obiter references, there seems to be little realisation that the predominant desire, of the psychotic and the non-psychotic alike, with very few exceptions, is not to get better but to get out. There are a few inaccuracies; for example, Broadmoor does not take its patients from "all parts of England and Wales"; Park Lane Special Hospital on Merseyside caters for its own Northern catchment area, from which it admits non-mentally-impaired patients. Broadmoor Hospital is part of the NHS, and comparisons should have been made with 'RHA administered' hospitals, not 'NHS' hospitals. There are several remarkable omissions from the bibliography, in that there is no reference to Professor Cyril Greenland's papers on the Special Hospitals in *Medicine, Science and the Law* (1969–1970), to the Aarvold Committee Report of 1973, to the exhaustive Report of the Parliamentary Estimates Sub-Committee (1968), to other authoritative papers published by the Institute of Criminology, University of Cambridge (Cropwood Round Table Conference, 1968) and in a Ciba Symposium on the Mentally Abnormal Offender (1968), nor to the Sandoz Lecture of 1976, delivered by Professor Nigel Walker. The numerous tables are full and informative, but the index is less than comprehensive.

The chapters on psychotic offenders are unexceptionable, and quantify the accepted knowledge that the offending mentally ill are not welcome in conventional hospitals. The chapters on psychopaths continue the discussion, a century and a half old now, of the role and effectiveness of the doctor and his team in the diagnosis and treatment of the antisocially personality disordered, and demonstrate the falling off of the numbers of "psychopaths" admitted to hospitals since the implementation of the 1959 Act. The kite of the "instant Sec. 47" disposal by the court is flown again, and vigorous arguments advanced to keep it in the air. I get the impression that the authors, and hospitals both Special and otherwise, would be happy to shed the burden of psychopathy, fashioned by Pritchard and bound on to medicine's shoulders by Henderson and the 1959 Act. The cords were loosened by the Butler Committee in 1975, and there is little doubt that both the Home Office and DHSS will welcome the results of this study.

This book should be read by all those interested in forensic psychiatry. There is much in it that most clinicians will agree with; but there is also enough contentious material to keep Journal Clubs heated and happy for quite a number of sessions.

PATRICK G. MCGRATH, *Physician Superintendent, Broadmoor Hospital, 1956–81*

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**Child Care and Adult Crime.** By BRIAN MINTY and COLIN ASHCROFT. Manchester: Manchester University Press. 1987. 232 pp. £29.50.

This book reports on a 20-year follow-up study of 300 children born between 1944 and 1953 and brought up in a socially deprived, inner-city area in the North of England. The study was conducted by analysing data obtained from files held in the social services' Child Guidance Clinic and Education Welfare Service Departments. The selection process yielded three matched comparison groups of 100 children; inevitably, there was an overlap between them. Criminal Records provided data on subsequent criminal histories. Surprisingly, the study found that boys who were admitted to care early, and who stayed longest in care, had a significantly better outcome, as measured by their criminal histories, than boys who were admitted into care later, and those who stayed for relatively short periods.

The book is intended for practitioners, although the authors hope it will also attract the interest of academics and service managers. The overview of previous research is comprehensive and should prove of considerable interest to those who wish to know more about the subject. The study itself has been conducted with great care, and considerable attention has been devoted to the statistical handling of the data. This, though, makes much of the book heavy reading and the chapters which report the results would have benefited from the insertion, or expansion in some cases, of a comprehensive summary and discussion. Because of the nature of the study there was no non-problematic control group, and follow-up criteria consisted only of criminal histories; it is a pity that the limitations, and even advantages, of such methodology were not discussed in more detail.

Despite the pitfalls, the results are of importance and will demand a considerable amount of re-thinking and re-planning of child care services if they are taken seriously.

E. CAROL SHELDRICK, *Consultant Psychiatrist, The Maudsley Hospital*

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**Child Sexual Abuse: A Handbook for Health Care and Legal Professionals.** By DIANE H. SCHETKY and ARTHUR H. GREEN. New York: Brunner/Mazel. 1988. 264 pp. $27.50.

This book, written in the main by two American child psychiatrists, is aimed at both clinicians and lawyers working with sexually abused children and their families. It is divided into four sections. The first provides an overview of normal psychosexual development and an attempt to place sexual abuse in a historical perspective. The remaining three deal with evaluation techniques, legal issues, and treatment. This is a clear, sober book dealing with an emotive and difficult topic, although certain areas which should be central to the authors' aims are surprisingly sketchy. The chapter on the expert as witness is brief and lacking in discussion as to the nature of expert testimony. There is, however, a useful chapter on an often neglected area on the assessment and treatment of the perpetrator.

I have two general concerns over this book. The first, a minor one, is the ethnocentricity of the authors: there is little reference to work done outside the US. My major worry, however, is in the way the authors appear to have isolated sexual abuse and dealt with it as something apart from other factors in a child's life. In many cases where sexual abuse has occurred its effects are minor compared with the gross emotional abuse of which it is a part. It seems unreal to talk of sexual abuse as a single condition requiring certain sorts of treatment approaches. The authors note that there are moves to introduce a DSM category of 'sexual abuse child disorder'. Their only concern over this is in the possible labelling effects. In a previous chapter they have rightly shown how sexual abuse can be followed by almost any form of psychiatric disorder. This focus on the abuse itself leads to an over-emphasis on the role of the child psychiatrist as the determinor of truth, i.e. the person who will find out what really happened to the child. This is not really our role. The real contribution of the child psychiatrist must be to provide a comprehensive psychiatric assessment of the child in which any effects of sexual abuse can be seen in the context of the child's total development and needs. Despite these criticisms, the book does provide a useful introducion to the literature, and like it or not, referrals involving sexual abuse seem set to continue rising.

STEPHEN WOLKIND, *Consultant Child Psychiatrist, The Maudsley Hospital*

**Language and Speech Disorders: A Neurophysiological Approach.** By E. M. R. CRITCHLEY. London: Clinical Neuroscience Publishers. 1987. 203 pp. £17.00.

Those readers familiar with Critchley's writings will not be disappointed by this book on language and speech disorders. Its subtitle is somewhat misleading, the essence of the book being to review disorders of language and speech but setting them in a much broader perspective than is usually the case. Critchley's approach is Jacksonian; it does not derive from Wernicke. He quotes Jackson at the beginning of his first chapter: "To locate the damage which destroys speech and to locate speech are two different things." Followers of Jackson, such as Head and Pick, are cited with approval. Critchely points out that it is unusual for patients to present with pure aphasic syndromes, and emphasises the importance of not overlooking the natural longitudinal progression of lesions presenting with aphasia in understanding such conditions.

Following a brief historical introduction, the disorders of speech and language which are covered are varied and comprehensive. Receptive disorders of language, autism, Parkinson's disease, and the linguistic aspects of schizophrenia are all discussed. In terms of mechanisms, the exploration of consequences of frontal lobe, thalamic, brain-stem and peri-aqueductal disturbances on speech are set alongside the role that neurotransmitters may play. This brings in the speech and language disturbances not only of Parkinson's disease, but also of such widespread disabilities as the Lesch-Nyhan syndrome, the Gilles de la Tourette syndrome, and the consequences of treatment with psychotropic drugs.

Some neurologists may distrust Critchley's use of some neurological concepts, e.g. para-epileptic phenomena; others will surely oppose attempts to move neurology away from the strict localisationalist viewpoint which has dominated the subject for many years. They should not be discouraged from reading this text, however, which is certainly not the diatribe against the established position which Freud's book on aphasia was, but which contains some useful information and many thoughtful paragraphs. It will certainly be of value to psychiatrists who wish to explore aphasia and related conditions from a neuropsychiatric point of view, and can be recommended for those interested in reading the kind of books that Critchley writes.

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**Pocket Examiner in Psychiatry.** By PATRICK MCKEON and EILISH GILVARRY. Edinburgh, London, Melbourne, and New York: Churchill Livingstone. 1988. 268 pp. £7·95.

This slim volume would easily fit into the side pocket of a white coat, but would be a tight fit in the back pocket of designer jeans. Since the book is aimed at MRCPsych candidates, final year medical students, and other postgraduate doctors, the problem of jeans should rarely arise.

No reference is made to the cover photograph, which resembles a micrograph of gastric mucosa, but could be the hippocampus.

The book consists of 399 (why not 400?) questions covering the major topics in psychiatry, presented in random order, which are to be answered aloud to a colleague before reading the text answer which is to be found later in the book. This is to prepare the candidate for "the uncertainty and immediacy" of oral examination, but the format does not allow systematic study of a particular topic. The text contains the answer to the question, followed by references to well-known postgraduate textbooks or selected review articles. Although the format is original, the quality of text is variable and in some cases appears to consist of a mediocre synopsis of the article(s) to which it refers. Few of the questions are in the form of a case vignette, a format which is increasingly being used in the MRCPsych examination, and some of the questions seem unimaginative. The topics covered are comprehensive, and the lazy candidate may be tempted to spend his evenings reading this book instead of the original textbook and papers. This would be a mistake.

It is not clear that this book will succeed in preparing the candidate for oral examination, and it is no substitute for serious study. It could, however, provide light relief in those anxious days before the examination.

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**Psychiatry and Religion: Overlapping Concerns.** Edited by LILLIAN H. ROBINSON. New Orleans: Cambridge University Press. 1986. 178 pp. £9.95.

"Healing and religion have been separated only for a few centuries". Thus begins Robinson in introducing this collection of ten papers by American psychiatrists dealing with the interface of psychiatry and religion.

Recent American surveys have shown that 90% of the population believe in God. Chapter 10 reviews the literature to see the extent to which psychiatric research assesses the role of religion in the lives of psychiatric patients; reference to a religious variable was found in only 2% of research papers. A number of useful suggestions are made for research to evaluate how psychiatric and religious dynamics inter-relate.

Chapter 6 deals with how to evaluate patients' religious ideation. The different stages of religious development are discussed. There is a need to be able to understand and assess these, and to discriminate whether a patient's religious experiences are normal or pathological. For example, hallucinations may be psychotic and guilt may be neurotic, or both may be appropriate expressions of religion.

Chapter 9 reviews the religious and scientific debate on the origin of homosexuality. The "ex-gay movement" is described; this is a US-based religious self-help group aimed at helping members change from homosexual to heterosexual orientation. There is an interesting breakdown of 50 participants interviewed who consider themselves ex-homosexuals; of these, nine appear to have achieved "stable non-conflicting change in orientation".

Other chapters deal with areas such as psychoanalysis and religion, collaboration of therapists and clergy, the concept of the wounded healer, and the impact of advances in neurophysiology in religious and psychiatric thinking.

Although the emphasis is on Judean–Christian concepts of religion, all sorts of areas are touched on and drawn from. The book is peppered with lovely quotes and interesting references from religion, philosophy, and art, as well as psychoanalysis and science. In addition to being enjoyable in itself, it leaves the reader with ideas and encouragement for further reading.

BERNADETTE MURPHY, *Tutor in Psychiatry, Mater Misericordiae Hospital, Dublin*

**Preventing Mental Illness.** By JENNIFER NEWTON. London: Routledge and Kegan Paul. 1988. 275 pp. £25.00.

The prevention of mental illness has been one of the officially stated aims of many mental health programmes, most notably the American Community Mental Health Programme of 1963. British psychiatrists, on the whole, tend to be sceptical of the claims of the practicality of preventive programmes. This well-researched and balanced book is therefore welcome. Newton makes it clear from the beginning that there are no easy answers, but continually stresses the importance of understanding the aetiology of mental illness and attempting to develop preventive strategies.

There is a brief historical introduction, followed by a chapter reviewing the epidemiological literature. Chapter 3 looks at the problems of developing a suitable model for prevention; it is seen as reducing the incidence of mental illness among those without symptoms and those with symptoms not severe or extensive enough to be considered cases. Depression and schizophrenia are taken as illustrative examples; various aetiological theories are reviewed in the next two chapters with a strong emphasis on the psychosocial models. In Chapter 6 Newton considers the prevention of psychiatric disturbance in childhood and the relationship between events and symptoms in childhood and the development of mental illness in adult life.

Chapter 7 is concerned with approaches to prevention, and ends with a consideration of the best points for intervention in the aetiological process. This is followed by a discussion of the role of social policies, particularly concerning employment and unemployment, and the role of women. Chapter 9 is concerned with preventive intervention with small groups and individuals and gives examples of programmes aimed at vulnerable groups. This is followed by a brief review of preventive programmes within the statutory services in the USA and Britain.

The final chapter considers future strategies, and in particular urges psychiatry to give a professional lead and to supply advice, guidance, and support to the preventive efforts of primary care workers and voluntary groups.

It is obviously impossible in a book of this size to cover the entire field of mental illness. There is little about biological aspects, or the role of alcohol and other addictive substances. However, the careful and cautious general approach to the subject should make even the most sceptical think again about the possibilities of prevention. The description of successful programmes which can be reproduced in other settings is most useful, and there is a wide-ranging bibliography. This is a book which should be in every psychiatric library and deserves the attention of all psychiatrists.

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**Research in Mental Health Computing: The Next Five Years.** Edited by JOHN H. GREIST, JUDITH A. CARROLL, HAROLD P. ERDMAN, MARJORIE H. KLEIN and CECIL R. WURSTER. London: Haworth Press. 1988. 176 pp. $29.95.

How can computers contribute to mental health care? Historically, their large size, programming complexity, and thus high costs made computers available to only a few committed academics. They were used to develop computer-assisted diagnosis (e.g. the Present State Examination) and for local case registers. With the new micro PCs, immensely more power is available along with simpler, standard programs. Suddenly, everyone can use a computer. This report of a National Institutes of Health conference – the state of the art in the United States in 1985 – presents the views of a range of experts in computing science and psychiatry. It broadly contrasts mental health information systems, for epidemiology and administration, with expert systems for diagnosis and clinical decisions. The American literature (to 1985) is well referenced, and there are many ideas for innovative research. But, as one editor reminds us: "The quality and power of existing hardware and software far exceeds our capacity to use it at anything approaching its capacity. We do not need another generation of computers or even programming languages. We need a generation of clinicians who will take the powerful tools and apply them with care, ingenuity, wit, diligence and patience."

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**Psychiatric Interviewing: The Art of Understanding.** By SHAWN CHRISTOPHER SHEA. Philadelphia: W. B. Saunders. 1988. 583 pp. £16.75.

This excellent book focuses on the practical issues of sensitive interviewing. It provides a well-balanced synthesis of many approaches from various schools of psychiatry, psychology, and counselling, and is intended for psychiatrists, psychologists, counsellors, social workers, nurses, and other mental health professionals.

The book comprises three sections and ten chapters, each of which can be read as a separate unit. The first section, 'Interviewing. The principles behind the art', examines the processes of engagement and blending with the patient, the problem of eliciting valid and reliable information, the dynamic structure of the interview, aspects of body language, and methods of generating practical treatment options from the diagnostic perspectives of DSM–III–R and systems analysis. The second section, 'The interview and psychopathology', applies interviewing principles to patients with affective disorders, psychoses, and personality disorders. The third section, 'Advanced techniques of interviewing', describes techniques for exploring suicidal ideation. It goes on to give three methods by which a greater understanding of the patient can be gained. These are the assessment of patients for psychotherapy, the use of Kernberg's structured interview to decipher underlying personality, and the clinician's ongoing use of intuition and spontaneity. The final chapter looks at ways of moving with patients' resistance.

The author writes with eloquence and humour. There are many case vignettes, sample interview questions, and interview transcripts which both clarify and enhance the book's pragmatic approach. The text is comprehensive and deals in detail with fundamental principles of interviewing, as well as more advanced techniques, and is therefore suitable for professionals with different degrees and areas of experience. It was enjoyable and stimulating to read.

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**Consent and the Incompetent Patient: Ethics, Law and Medicine.** Edited by STEVEN R. HIRSCH and JOHN HARRIS. London: Royal College of Psychiatrists. 1988. 101 pp. £7.50.

Treatment of patients who lack capacity to give real consent remains a troubling dilemma, and the Royal College of Psychiatrists has produced the proceedings of a symposium on the topic organised by the Royal Society of Medicine in 1986. It took place when storms were raging over the Mental Health Act Commission's idiosyncratic paper on consent to treatment, and subsequently over its ill-fated draft code of practice. Now, with the dust settled and the respective documents buried, these proceedings inevitably appear to rake over the ashes. That said, these are thoughtful papers from a distinguished collection of heavyweights.

Two speculative, and rather dry, papers on what the law relating to incompetent patients may, or may not be, open the proceedings; however, Roger Ormrod points out that these are uncharted seas and recourse to the law does not help resolve ethical issues. Douglas Black gives a characteristic commonsense view and John Harris, a philosopher who supports both treatment and research, provides an elegantly argued piece. The section on practical implications is more lively, with contributions from Elaine Murphy and Brian Jennett, and an assault on that draft code of practice from Dorothy Silberston of the National Schizophrenia Fellowship. Whether or not the MHAC got hold of the wrong end of the stick with its views on battery, Shirley Turner (MHAC) shows a determination not to let go.

These proceedings raise many questions, and some of the papers seem detached from clinical life as we know it. If it's answers you want, here are two bits of advice from the book: firstly, listen to Douglas Black and use "gumption rather than guide-lines"; second is the reminder from one of the medical defence societies – you are much more likely to find yourself accused of negligence for your failure to treat a patient than you are for providing treatment – even where such treatment is given without the patient's consent.

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**Medical Neuropsychology: The Impact of Disease on Behaviour.** Edited by R. E. TARTER, D. H. VAN THIEL and K. L. EDWARDS. New York: Plenum Press. 1988. 350 pp. $42.50.

The preface to this handsomely produced volume expresses the hope that it will "inspire a more formal and intensive integration of neuropsychological assessment and rehabilitation procedures". An introductory chapter outlines the physiological abnormalities leading to acute confusional states, but offers no systematic outline of neuropsychological testing. Subsequent chapters focus on different body systems. The first part of each chapter consists of a very elementary review of its anatomy and physiology, presumably aimed at a psychologist readership. This is followed by a review of the neuropsychological literature relating to the body system in question, but is inconsistent in the weighting given to cognitive deficits and emotional problems. There is virtually no discussion of psychological approaches to management, although occasional references are made to medical treatment techniques. The best chapter, on neurological, cognitive and psychiatric sequelae associated with the surgical management of cardiac disease, gives a clear review of recent findings on the neuropsychological sequelae of cardiac bypass surgery and the difficulty in distinguishing between delirious and psychotic states post-operatively. Most of the rest of the book does not reach similar standards. I found the chapter on nutrition and childhood neuropsychological disorders particularly disappointing. It dealt only with nutritional deficiencies and allergies; no other aspects of developmental psychology are covered elsewhere.

The book falls between the stools of attempting to provide essential medical background for clinical neuropsychologists and at the same time sufficient neuropsychology for a medical readership. Neither task is satisfactorily achieved. In view of the promise of the title and the modest price I am particularly sorry not to be able to recommend this book.

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**Evaluating Mental Health Practice: Methods and Applications.** Edited by DEREK MILNE. 1987. Beckenham: Croom Helm. 280 pp. £29.50.

This book is timely, since the context for all health services, including those for mental health, is one of greater accountability. The aims of the book are to encourage more evaluation and to enhance research skills. Illustrations of evaluative work are provided for most of the disciplines involved in mental health practices, from art and drama therapy on the one hand to more overtly clinical services on the other.

For a book aimed at improving research skills in evaluation, there are some important omissions. There is virtually no discussion of the relative merits of examining process or outcome, nor any systematic approach to the skills of study design, case definition, reliability, and so on. There is support for small studies, but it is not pointed out that such small studies may miss important (i.e. clinically worthwhile) effects. Similarly, there is no mention of meta-analysis when a series of small studies on the same topic has been carried out. There is encouragement in the book for single-case designs, yet one of the important issues in the debate about employing single-case or group designs is not discussed, namely the usefulness or otherwise of the diagnostic or medical model. In the illustrative chapters, I would select as particularly helpful that on the evaluation of social work for the discussion of the issues in the evaluator/practitioner relationship and the chapter on evaluating community psychiatric services for its sound epidemiologically-based approach.

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***Annotation***

# Sight and Insight: Brain Dopamine Receptor Occupancy by Neuroleptics Visualised in Living Schizophrenic Patients by Positron Emission Tomography

JOHN L. WADDINGTON

There can be few more impressive sights in contemporary neuroscience and biological psychiatry than the imaging of neurotransmitter receptors in the brains of living human subjects by positron emission tomography (PET; Sedvall *et al*, 1986). How has such technology advanced our understanding of the pathophysiology and/or treatment of major psychiatric disorders?

In relation to schizophrenia, the dopamine (DA) hyperfunction hypothesis still holds centre stage (McKenna, 1987), but several critical issues remain to be clarified, even after 20 years of increasingly sophisticated investigations (Waddington, 1988*a*). Despite this, instances of dissent (e.g. Dinan, 1987) are still met with vigorous defence (Iversen, 1987; Crow, 1987). The dominant issue remains whether brain DA receptor density is elevated in schizophrenia independent of the increase that would be expected as an adaptive response to long-term treatment with neuroleptic (DA-antagonist) drugs. This issue relates both to D-1 (linked to the stimulation of adenylate cyclase) and to D-2 (without such linkage, or linked to the inhibition of this enzyme) subtypes of DA receptor. Some 12 years of post-mortem brain studies have failed to resolve this controversy satisfactorily (Seeman, 1987; Wyatt *et al*, 1988), because of the dearth of schizophrenic cases never exposed to such medication. By obviating the fundamental confound of requiring the demise of almost invariably older, neuroleptic-treated patients, PET technology has the potential to answer this question through *in vivo* measurements in young patients not yet prescribed neuroleptic drugs.

The first such study, from the Johns Hopkins PET group, reported a striking elevation in the $B_{max}$ (density) of caudate-putamen D-2 dopamine receptors in schizophrenic patients who were drug naive (Wong *et al*, 1986). However, the second study, from the Karolinska PET group, found caudate-putamen D-2 receptor density in drug-naive schizophrenic patients not to differ from that in normal controls (Farde *et al*, 1987*a*). It is important to emphasise that this is *not* a situation where one study found an effect that just attained statistical significance while the other reported findings that fell short of significance; the positive finding is clear cut and statistically robust, while the negative report is unequivocally so.

In seeking to resolve this profound discrepancy, potentially important technical and clinical differences between the Hopkins and Karolinska studies must be carefully considered: the two groups used different radioligands for the D-2 receptor, $^{11}$C-*N*-methylspiperone and $^{11}$C-raclopride respectively, and derived their receptor binding parameters using fundamentally different kinetic models. The former analysis was based on a complex, three-compartment model applied to data from two PET scans, one performed while receptors were not blocked by concurrent treatment, and another that was preceded by administration of a modest dose of haloperidol. The latter analysis was also based on two PET scans, one using a tracer dose and the other a saturating dose of the ligand, in a simplistic application of a more conventional binding model. There have been heated discussions on the weaknesses and merits of each approach (Zeeberg *et al*, 1988; Seeman *et al*, 1988). Regarding the neuroleptic-naive clinical populations, that studied at the Johns Hopkins was perhaps the more atypical, having a mean age of 31 and a mean of five years of untreated illness. While patients were considered not to have been exposed to neuroleptics on the basis of self-reports and information from a relative who had resided with the patient, such a long duration of illness may make it more difficult to verify their clinical and medication history. The population studied at the Karolinska was a more typical group of completely drug-naive first-admission schizophrenic patients, with a mean age of 24. However, identical operational criteria (DSM–III; American Psychiatric Association, 1980) for the diagnosis of schizophrenia were used by both groups of investigators.

An earlier study, at Northwick Park (Crawley *et al*, 1986), reported an 11% increase in the striatum : cerebellum ratio for D-2 receptor binding in schizophrenic patients, using the gamma-emitting ligand $^{77}$Br-bromospiperone; however, only one-third of the patients were neuroleptic naive, and binding parameters were not quantified further. Recent PET studies of D-2 receptor function in the brain of a patient with Parkinsonism induced by the neurotoxin 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) have revealed that both the forward rate constant and dissociation rate constant were elevated 100-fold in comparison with control values (Perlmutter *et al*, 1987). This may represent an alternative kinetic approach to clarifying D-2 receptor function in schizophrenia.

If PET studies have so far failed to clarify the status of DA receptor density in relation to the putative pathophysiology of the illness, has it made any contribution to understanding further the role of DA receptor blockade in the antipsychotic action of neuroleptic drugs? In this regard, PET technology has made it possible to examine the extent of *in vivo* occupancy of D-2 receptors by a wide variety of typical and atypical neuroleptic drugs from different chemical classes (Farde *et al*, 1988*a*). The phenothiazines chlorpromazine (100 mg b.i.d.), thioridazine (100 mg b.i.d.), trifluoperazine (5 mg b.i.d.) and perphenazine (4 mg b.i.d.), the thioxanthene flupenthixol (5 mg b.i.d.), the butyrophenone haloperidol (4 mg b.i.d.), and the diphenylbutylpiperidine pimozide (4 mg b.i.d.) each occupied 70–84% of caudate-putamen D-2 receptors in schizophrenic patients. Among atypical neuroleptics, the substituted benzamide sulpiride (400 mg b.i.d.) and the dibenzodiazepine clozapine (300 mg b.i.d.) also occupied 65–82% of caudate-putamen D-2 receptors, while the tricyclic antidepressant nortriptyline (25 mg b.i.d.) failed to occupy D-2 receptors. Thus, the supposedly reduced liability of sulpiride and clozapine to induce acute extrapyramidal side-effects does not appear readily explicable in terms of lack of binding to basal-ganglia D-2 receptors, and may imply that additional factors contribute to their emergence with more typical neuroleptics. With the now ready availability of sulpiride and a recent favourable re-evaluation of the place of clozapine in the neuroleptic armamentarium (Kane *et al*, 1988), it may be necessary to revise the notion of their having selective affinity for mesocorticolimbic sites.

There remains a widely held, but as yet unverified, presumption that sulpiride and clozapine may be less likely to induce tardive dyskinesia. If this were to be sustained in careful epidemiological studies, their ability to occupy caudate-putamen D-2 receptors to an extent comparable with more typical neuroleptics would be additional evidence against tardive dyskinesia having any simple pathophysiology in striatal DA-receptor supersensitivity consequent to long-term blockade (Waddington, 1984, 1987). The available post-mortem studies comparing DA receptors in the extrapyramidal and limbic systems of schizophrenic patients with and without dyskinesia in life are entirely negative (Waddington, 1985), and *in vivo* studies by PET have the potential to lay to rest this 'chestnut'.

All of the above PET analyses have focused on occupancy of D-2 receptors in the caudate putamen, but what of the role of extrastriatal (limbic and cortical) D-2 receptors and of the D-1 receptor? Although they are evident in the pituitary, it has proved extremely difficult to detect D-2 receptors in the human frontal or temporal neocortex, both *in vivo* (Farde *et al*, 1988*b*) and *in vitro* (Hall *et al*, 1988). If they are present, then their density appears to be very low indeed, although this does not necessarily preclude some role in mediating neuroleptic drug effects (Farde *et al*, 1988*b*). In the non-human primate they appear to be present in the entorhinal and piriform cortex, but not in the frontal cortex (Köhler & Radesäter, 1986). Limitations inherent to current PET technology make it very difficult to resolve limbic dopaminergic areas, such as the nucleus accumbens, because of proximity to the caudate-putamen complex.

The D-1 dopamine receptor has recently metamorphosed from a neurochemical entity of obscure behavioural relevance to a physiological unit of apparently profound significance for numerous aspects of psychomotor function (Waddington & O'Boyle, 1987), and perhaps also for antipsychotic drug action (Waddington, 1988*b*). Using $^{11}$C-SCH 23390 as a D-1 receptor ligand, Farde *et al* (1987*b*) have confirmed a dense localisation in the caudate putamen of normal volunteers, but there was additionally some degree of binding in neocortical areas; any contribution from the binding of SCH 23390 to serotonergic (particularly 5-HT$_2$) receptors remains uncertain. Recent post-mortem studies on the density of D-1 receptors in schizophrenic brain have proved contradictory, with both a significant decrease (Hess *et al*, 1987) and clearly negative findings (Czudek & Reynolds, 1988). Whether PET can realise its potential to clarify this issue remains to be determined. However, recent studies of D-1 v. D-2 receptor occupancy in schizophrenic patients receiving neuroleptic treatment are of considerable interest. A conventional maintenance dose of sulpiride failed to occupy caudate-putamen D-1 receptors in one case (i.e. selective D-2 occupancy), while flupenthixol displaced some 20% of caudate-putamen and neocortical D-1 binding in comparison with 87% displacement of D-2 binding in a second case (Farde *et al*, 1987*b*). Interestingly, structure-affinity studies indicate that thioxanthenes and phenothiazines, including flupenthixol, are substantially non-selective antagonists of both D-1 and D-2 receptors in rat striatum, but may have somewhat reduced affinity for D-1 receptors in human post-mortem putamen (O'Boyle *et al*, 1986; O'Boyle & Waddington, 1987). Thus, PET studies to date provide *in vivo* evidence for D-2 receptor blockade in the mechanism of the antipsychotic activity of currently available neuroleptic drugs. Clearly, clinical investigations of selective D-1 antagonists will be necessary to determine their potential as antipsychotic agents.

The determination of D-1 and D-2 receptor occupancy during actual clinical trials of neuroleptic drugs illustrates the true potential of PET technology, and the first steps along this path have recently been taken. In a trial in acute schizophrenia of the new, high-potency, substituted benzamide neuroleptic raclopride (Farde *et al*, 1988*c*), clinical ratings with the Brief Psychiatric Rating Scale (BPRS) and the Adverse Event Checklist were supplemented by plasma prolactin measures and, in some patients, by PET assessment of D-2 receptor occupancy. In two patients showing a marked reduction of BPRS scores in the absence of extrapyramidal side-effects during treatment with raclopride (3–4 mg b.i.d.), 68–72% of caudate-putamen D-2 receptors were occupied by the drug.

Occupancy of D-2 receptors endured at least 54 hours after haloperidol withdrawal, and for at least 27 hours following sulpiride withdrawal, periods considerably beyond evident decline in plasma levels (Farde *et al*, 1988*a*; see also Smith *et al*, 1988). This suggests a curvilinear relationship between brain receptor occupancy and concentration of drug in plasma, which may be of importance for studies probing relationships between peripheral pharmacokinetic variables and clinical effects. If plasma levels can fall significantly with little diminution of D-2 receptor occupancy, this would suggest that dosage may have been supraoptimal in relation to such occupancy. Thus, any additional clinical advantage for such doses would not appear to be attributable to D-2 receptor blockade beyond that attainable at lower doses.

This opens the way to addressing directly several critical but unresolved issues. For example, what are the inter-relationships between psychotic relapse, extent of DA receptor occupancy, and adverse psychosocial influences? Do neuroleptic non-responders fail to attain adequate DA receptor occupancy, or do they not respond *despite* adequate occupancy of such receptors? Do some patients experience extrapyramidal side-effects because their DA receptor occupancy exceeds that necessary to attain antipsychotic efficacy, or because of some additional but undefined vulnerability factor unrelated to occupancy of such receptors? We can only speculate on the answers which could emerge, but some might require us to re-evaluate several current theoretical perspectives on the precise relationship between the actions of neuroleptic drugs at brain DA receptors, and their clinical and adverse effects. With the inherent complexities of PET, the number of cases examined to date remains small, and much further systematic study is required.

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**Review Article**

# Seclusion

ADRIAN ANGOLD

Seclusion is a commonly used management technique in some areas of psychiatric practice. However, its theoretical and empirical underpinnings are greatly wanting in many respects. This paper reviews the present state of our knowledge and ignorance about seclusion, and suggests some strategies for much-needed research.

Seclusion (by which I mean "containment of a patient alone in a room or other enclosed area from which that patient has no means of egress" (Royal College of Psychiatrists, 1982)) has a long and chequered history as a form of psychiatric treatment. In 18th-century England it was widely believed that terror was an important adjunct to the control and cure of insanity (Cullen, 1816), and a variety of sophisticated instruments, which might well have found favour in the fastnesses of the Inquisition, were in regular use in houses where lunatics were confined (Conolly, 1973, first published 1856). Madmen who proved difficult to control were often isolated for long periods (sometimes many years), and frequently maintained in physical restraints as well (Tuke, 1813).

Towards the turn of the 19th century, in both France and England, a more humane note was sounded. Pinel was appointed physician to the Bicetre in 1792 and gained fame by unchaining its sorry inmates. The Society of Friends opened The Retreat at York in 1796. The work of these and other pioneers powerfully influenced John Conolly, who instituted a system of non-restraint management at the Hanwell Asylum, a place which had previously been as vigorous as any in its physical abuse of the insane. In his book *Treatment of the Insane without Mechanical Restraints* of 1856 (Conolly, 1973), he paints a rosy picture of life in his asylum, but even here the need for special provisions when dealing with violent or extremely excited patients was apparent. For such cases Conolly strongly, and quite lyrically, advocated the use of the padded seclusion room. He carefully described the design of a room to be used for this purpose, indicating that, although sparsely furnished, it need not be unpleasant, and altogether regarded seclusion as an enlightened means of providing disturbed patients with calm and security, while avoiding the evils of pharmacological oversedation (*ibid.*, p. 68).

Of course, Conolly's approach was far from achieving universal acceptance, but by the end of the 19th century, moderate and informed psychiatric opinion continued to find a place for seclusion in the treatment armamentarium; thus Hack Tuke (1892) commented, "If Conolly attached too much importance to this mode of treating patients [seclusion], the other extreme, of regarding the padded room as never useful, is a very questionable position to take". Here the argument seems to have rested for a long time.

After World War II, models of psychiatric care were based on the ideal of a therapeutic milieu or community. These, accompanied by enormous advances in psychopharmacology, transformed the treatment offered in most psychiatric facilities. In the USA Greenblatt *et al* (1980, first published 1955) documented the possibility of producing startling reductions in the use of seclusion in various private and public hospital settings by introducing changes in the hospital milieu, using the principles of the therapeutic community, at a time before the introduction of the widespread use of phenothiazines. For instance, in the Bedford Veterans Administration Hospital, seclusion hours were reduced from 2900 in February 1952 to 28 in November 1952. This work was also particularly valuable in that it highlighted many of the interpersonal and administrative problems that may arise when an institution adopts markedly different policies and practices from those that it has previously espoused. In the only detailed study conducted in Britain, Thompson (1986) documented a fall in the use of seclusion with general adult psychiatric admissions betwen 1981 and 1984, that he suggested might have been attributable to the introduction of the Mental Health Act 1983.

However, reference to the indexes of several major psychiatric textbooks of the 20th century failed to reveal any entry under 'Seclusion', despite the continuing use of this form of treatment in many psychiatric facilities, including the most respected (Royal College of Psychiatrists, 1982). Furthermore, considerable doubts exist in some quarters as to its appropriateness as a form of treatment, and there is discomforting evidence of its abuse (HMSO, 1978).

In Britain, this academic neglect of seclusion as a topic for teaching and study has a parallel in the sweeping away of the old regulations governing its use, and their replacement with a mere recommendation from the Department of Health and Social Security that each hospital should have a clearly established procedure. However, the Royal College of Psychiatrists (1982) firmly supported the view that the use of seclusion should continue to be carefully supervised, in a paper outlining the seclusion procedure at the Maudsley Hospital. This paper was published with the stated aim of "encouraging hospitals to think about this subject and review their policies". It also stated that "it is imperative that doctors should take a primary responsibility for support and guidance of nurses involved in the necessity to use such a facility". It does not, however, provide any knowledge base for the support and guidance of the doctors themselves, or any reference to sources where such knowledge might be obtained.

A number of papers, mostly from American centres, examining the indications for, and use of, seclusion have appeared in recent years, in a variety of journals, and the remainder of this paper summarises the findings to date, and indicates some very significant gaps in our knowledge.

### How many patients are secluded?

The frequency of seclusion varies very widely from one unit to another, with Tardiff (1981) reporting the use of seclusion or restraint for 1.9% of long-stay admissions, while Phillips & Nasr (1983) report its use on 51% of the 35 subjects in their study of a sample of consecutive admissions to a state mental hospital (which did not report separate figures for seclusion and physical restraint, although it is probable that in both of these studies use of the latter was combined with seclusion). Of the 11 studies where the incidence of seclusion may be ascertained, five report its use in more than 25% of patients. Soliday (1985) found that 65% of the patients on three general psychiatric wards reported that they had been secluded at least once. However, 41% of the patients failed to return their questionnaires, so this figure may represent the rate for an atypical subgroup. Of the secluded patients, only 4% were apparently secluded more than twice. There were no differences in the sex, age or legal status (formal or informal) of the patients in the secluded compared with the non-secluded group; however, the secluded group had been in hospital longer and had also had more previous admissions. On this last point we might simply note that they had been 'at risk' for seclusion longer. Wadeson & Carpenter (1976) reported that of their 62 patients on an NIMH clinical research unit with a low medication policy, 41 (66%) were secluded, but their definition of seclusion included some episodes in which the door was not locked and during which a nurse remained with the patient. Clearly such episodes do not constitute seclusion as defined here. A similar problem with definition arises in Wells's (1972) use of the term. In fact, the 4% of patients 'secluded' in his study of a 22-bed psychiatric floor in a university hospital were given individual intensive nursing rather than being isolated.

It is not at all clear, however, why such large differences in the use of seclusion are found. The importance of specific policy decisions may be deduced from some reports. The high rate of seclusion (44%) reported by Binder (1979), from an 11-bed crisis intervention unit, in which all patients who presented with a previous history of violence were automatically secluded, and all patients had an authorisation for seclusion "p.r.n." included in their admission work-up, is an example. Davidson *et al* (1984) documented a 99% reduction in the use of seclusion in a large hospital for the profoundly retarded, over just a few months, in response to instructions to reduce the use of seclusion, plus feedback as to its rate of use. As mentioned above, Greenblatt *et al* (1980, first published 1955) demonstrated that the move from custodial to active therapeutic care in the hospital environment could be associated with a dramatic reduction in the need for, and use of, seclusion.

Another factor that has been suggested to explain the variability of seclusion rates is the nature of the patient population. For instance, Tardiff (1981) found a very low incidence among older chronic hospital patients, while Erikson & Realmuto (1983) linked seclusion on an adolescent psychiatric ward with violently aggressive, young, borderline patients. These authors also implicated the staff as a factor in increasing the use of restrictive measures. They noted 128 seclusions during a year of major staffing upheavals on an adolescent ward (during which there were two riots by patients!), in comparison with only 44 episodes two years later when the staff situation was more stable.

It has also been suggested that the sparing use of psychoactive medication results in an increased need for seclusion (Wadeson & Carpenter, 1976), but such a view is not easily substantiated or refuted from the available literature, where a 'low-medication' policy has been reported in a population where 66% are 'secluded' (but see the note above relating to Wadeson & Carpenter's (1976) use of the term), while the use of 'liberal medication' has resulted in 44% of patients being secluded (Binder, 1979). In no case have data as to the actual levels of consumption of drugs been presented. Schwab & Lahmeyer (1979) found that significantly more of their secluded group from a locked 24-bed general psychiatric unit required antipsychotic medication and lithium than their non-secluded controls, while controls were significantly more likely to have received no medication, but it is not clear from their paper how the use of antipsychotic medication was related to seclusion on their unit.

The use of seclusion in special hospitals may be mentioned here. The *Report of the Committee of Inquiry into Rampton Hospital* (HMSO, 1980) noted that, on any one day, between 7% and 9% of the women, but less than 1% of the men, were in seclusion. Some were more or less perpetually secluded. The committee recommended revision of the seclusion policy at Rampton suggesting, for instance, that a visit by a doctor within 24 hours of the institution of seclusion was an inadequate procedure for controlling its use.

### Characteristics of the secluded patient

There is broad agreement across several studies about the type of patient most likely to be secluded. The most frequent picture is of a young, violent, psychotic man (Mattson & Sacks, 1978; Plutchic *et al*, 1978; Schwab & Lahmeyer 1979; Tardiff, 1981; Phillips & Nasr, 1983; Thompson, 1986), secluded soon after admission (Binder, 1979; Tardiff, 1981; Soloff & Turner 1981; Thompson, 1986; Angold & Pickles, 1987). These patients also tend to stay longer in hospital than those who do not require or receive seclusion (Schwab & Lahmeyer, 1979; Soloff & Turner, 1981; Soliday, 1985; Thompson, 1986). Phillips & Nasr (1983), comparing their secluded and non-secluded groups, found a higher incidence of psychosis in those secluded, but only among those secluded for reasons not associated with violence, suggesting that seclusion was not being used as a specific measure against psychotic violence, but was selectively used in relation to other sorts of behaviour in psychotics. Angold & Pickles (1989) found no difference in the numbers of psychotic patients between their secluded and non-secluded groups from an adolescent psychiatric unit.

Erikson & Realmuto (1983) suggested that their retrospective record data from an adolescent unit supported the notion that patients with different diagnoses tended to be secluded as a result of different sorts of incident, e.g. that seclusion of hyperactive-impulsive adolescents resulted from sudden outbursts, while those of conduct-disordered adolescents were the result of escalating misbehaviour until a controlling response was achieved. However, the reliabilities of some of the ratings used in this study were low, the numbers in some categories were very small, and no significance levels were reported, so these suggestions are tentative, although the research strategy deserves further consideration.

### Timing of seclusion

Several studies have reported diurnal variations in seclusion rates, but different units appear to have quite different patterns, with increased rates at night found by Schwab & Lahmeyer (1979), and increases during the day reported by Plutchic *et al* (1978), Phillips & Nasr (1983), Angold & Pickles (1989) and Thompson (1986). Others reported increases in relation to mealtimes (Campbell *et al*, 1982; Thompson, 1986), nursing shift changes (Campbell *et al*, 1982), and in the evening (Binder, 1979). Angold & Pickles (1989) found that night-time seclusions were longer, on average.

### Reasons for seclusion

Most studies have reported violence to be the commonest precipitant of seclusion, especially interpersonal violence, and most especially when directed against staff. Garrison (1984), in his interesting analysis of 1700 incidents of aggressive behaviour on a children's unit, found that male staff were considerably more likely to seclude children who were aggressive towards them than female staff. Other related reasons included threats and abuse, agitation, acute excitement, and generally disruptive behaviour. Mattson & Sacks (1978), however, reported disruption of the therapeutic environment (e.g. by noisy behaviour) as the commonest precipitant of seclusion. Angold & Pickles (1989) found that disruptive behaviour was the commonest single reason mentioned in seclusion records, but that violence was more common altogether (especially violence directed against staff). Schwab & Lahmeyer (1979) noted the "need for destimulation" as the prime precipitant, while actual assaults accounted for only 4%, and threats of assaults only 6%, of the seclusions reported by them. Interestingly, Schwab and Lahmeyer also provided the only study reporting higher rates of seclusion during the night than during the day, and the only study where manic patients figured significantly more commonly in the secluded population than in controls, while schizophrenic patients were equally distributed. So it would seem that the use of seclusion reported by them is atypical in many ways.

### Duration of seclusion

Surprisingly few studies have examined duration of seclusion. It seems clear that very long periods of seclusion (many days, weeks or months) are unacceptable (HMSO, 1978), and some work on the effects of long-term solitary confinement in prison (Grassian, 1983) serves to underline the possible psychopathological harmfulness of such treatment. However, those studies that have reported data on duration reveal very considerable variations, both between studies and in relation to different incidents within the same unit. Soloff & Turner (1981) reported a mean duration of 10.8 h (median = 2.8 h with a range from 10 min to 20 h, and Thompson (1986) reported a median of 4.3 h with a range from 10 min to 25.5 h. The latter author also noted that first episodes of seclusion for any subject tended to be longer than subsequent episodes (median 9.1 h for first seclusion and 3.3 h for subsequent seclusions), but Soloff and Turner found no significant change in the length of seclusion with repeated episodes. Angold & Pickles (1989) reported the shortest mean duration of 31 min (range 2–330 min) from an adolescent unit in London, and an unexplained reduction in mean duration over the six-year period of their study. They also found no effect of repeated episodes on the durations of seclusions. The longest mean duration of 15.7 h (range 1–72 h) was reported by Binder (1979), whose acute adult service secluded 44% of its population at least once.

It is entirely unclear what the differential effects of different durations of seclusion are. Most would agree that the shortest effective time would be preferable, but the length of seclusion seems to be largely idiosyncratic to each unit, and to the patient and staff involved. Angold & Pickles (1987), applying survival analysis techniques involving a number of variables that might have been expected to affect the duration of seclusion, such as the nature of its precipitants, found only that younger non-psychotics received significantly shorter seclusion than younger psychotics, and that even this difference had disappeared by the age of 16.

It might be supposed that the duration of seclusion would be determined by the time taken by patients to 'calm down' once they have been secluded. However, it has been noted that most patients settle quickly and are therefore presumably being kept in seclusion after they have 'calmed down', while the only study to report on the outcome of seclusion details frequent disturbances on release, suggesting that some patients are released before they have calmed sufficiently (Mattson & Sacks, 1978). Furthermore, it is not at all clear why patients in different units should take such dramatically different lengths of time to settle.

It seems likely that the duration of any episode of seclusion is the product of the complex interaction of the usual practice of the unit, the nature of the patient, the precipitating incident, the staff involved and the atmosphere of the ward, including the behaviour and the mental states of other patients. However, Plutchic *et al* (1978), in noting that the length of seclusion depended on the whims of the staff who happened to be there, also drew attention to the anger and anxiety that this created in patients.

### Frequency of seclusion for individual patients

Greenblatt *et al* (1980) and Davidson *et al* (1984) describe situations in which some patients were secluded for a large proportion of the time, while in the 19th century patients might be isolated for years. Schwab & Lahmeyer (1979) documented between 1 and 24 seclusions per patient. Angold & Pickles' (1989) study involved patients who had been secluded between 1 and 50 times. However, none of the other factors measured by these latter authors (such as the sex, age or diagnosis of the patient) were statistically related to the frequency of seclusion in their quasilikelihood and binary-regression analyses. They also found that statistical approaches that ignored the problems of overdispersion and repeated measures on some individuals produced spurious associations. These issues had not previously been adequately explored, and further studies should take care to use statistical methods that either take account of them or are robust to them. If one accepts that very frequent or prolonged isolation is by common consent no longer deemed to be good treatment, where should the limits of good practice be set? It has to be admitted that no clear answer can be given and no data are presently available to provide an answer. We know little of the specific characteristics of frequently secluded patients as opposed to those of patients who experience only one or two episodes of seclusion, nor has the relative therapeutic effect of the twentieth as opposed to the first seclusion been documented.

### The termination of seclusion episodes

Those who have discussed the termination of a seclusion episode usually recommend a gradual reintroduction of the patient into the ward milieu, without detailing exactly what is meant by this (Gutheil, 1978). In many instances it must be the case that the patient is either isolated in a locked room or on the open ward, with little possibility of a graded reintroduction. Mattson & Sacks' (1978) study serves as a reminder, perhaps hardly needed by anyone who has actually supervised the end of an episode of seclusion, that it may signal a further outbreak of the behaviour that precipitated the episode. On the other hand, Campbell *et al* (1982) reported that 74% of their patients engaged in calm and constructive activity following seclusion. However, 32 episodes of recurring disturbed behaviour were also noted in relation to the 69 seclusions they reported, and from the presentation of their data it is impossible to tell how many seclusions were entirely peaceful in their outcome.

### Patients' attitudes to seclusion

Some patients have been known to request placement in seclusion or physical restraints in an attempt to maintain self-control (HMSO, 1980), and restraints have been documented as acting as positive reinforcement in a few mentally retarded people, thus maintaining aggressive behaviour (Flavell *et al*, 1978). However, it appears that the majority of patients dislike being locked up on their own. Given that the justification for seclusion is often along the lines that a patient needs time away from the activity of the ward to calm down and regain his equilibrium and a measure of self-control, Wadeson & Carpenter's (1976) study of the "impact of seclusion room experience" is disturbing. Patients' reactions were evaluated through their productions in art sessions, and so the results are necessarily impressionistic. However, the degree of negative affect and frightening delusional material associated with seclusion was quite dramatic; for instance, several patients felt that they were in prison, and one believed he was in a gas chamber. The fear, anger, resentment and frustration of seclusion were often recalled at follow-up one year later, suggesting that these feelings were intense. It was also suggested that seclusion (of 30 minutes to a few hours) stimulated hallucinatory experiences, which were unexpectedly often perceived as comforting. The prisoners in solitary confinement described by Grassian (1983) and other earlier workers also often decribed hallucinatory material, but only after much longer isolation; however, none of these were overtly psychotic at the onset of their solitary confinement, as far as we know.

Plutchic *et al* (1978) conducted interviews with patients, who mostly felt that seclusion helped them calm down. Some felt safe, but many were also bored, depressed, angry, disgusted, confused, and felt helpless.

In his questionnaire study, Soliday (1985) found that patients frequently saw seclusion in very negative terms, and were much less convinced of its usefulness than the staff on their unit – 67% said that seclusion was usually or always felt as punishment (compared with 54% of the staff), and 51% said that it was usually or always humiliating (compared with only 14% of the staff). In a commentary on Soliday's paper, an ex-patient (Chamberlin, 1985) compared seclusion on psychiatric wards with solitary confinement used as a form of punishment or torture in prisons, and comments, "it is essential that mental health professionals stop denying our perceptions".

Unsecluded patients have been reported as feeling nervous and uncomfortable when patients are in seclusion, even when they are glad to have them out of the way (Mattson & Sacks, 1978), suggesting that they recognised the unpleasantness of the experience. However, Gutheil (1978) suggested that some patients envy others their seclusion, seeing it as a sign of special interest by the staff. On the other hand, he noted the potential for a sense of abandonment in seclusion, and a lasting, strongly negative, reaction to it. The Committee of Inquiry into Rampton Hospital (HMSO, 1980) also suggested that seclusion was associated with an increase in status with other patients, and that this might be the reason for the observed higher rate of seclusion among women.

### Staff attitudes to seclusion

A number of writers have commented on staff disquiet about the use of seclusion (Fitzgerald & Long, 1973; Strutt *et al*, 1980; Campbell *et al*, 1982). Certainly the inappropriate use of seclusion has strong associations with the worst of 19th and 20th-century psychiatric malpractice (Tuke, 1813; Greenblatt *et al*, 1955; HMSO, 1970, 1972, 1978, 1980), while the struggle which often precedes the locking of the door may be particularly unpleasant for staff (Di Fabio, 1981). Most have concluded, however, that the majority of staff on units using seclusion regard it as a necessary part of the treatment armamentarium (Gair *et al*, 1965; Plutchic *et al*, 1978; Royal College of Psychiatrists, 1981; Sreenivasan, 1983; Soliday, 1985). Plutchic *et al* (1978) found that both patients and staff saw the isolation of patients from disturbing interactions and the maintenance of the ward 'minisociety' as major functions of seclusion. Even Greenblatt *et al* (1980) and Davidson *et al* (1984), who were specifically concerned to demonstrate that the use of restrictive procedures could be dramatically reduced in many units, did not document its complete disappearance.

Gutheil (1978) suggested that there were three basic 'theoretical' aspects of seclusion as practised in most units: (a) containment of the potential for a patient to do harm to himself or others; (b) isolation from pathological relationships and paranoid interpretations of others' behaviour; and (c) decrease in sensory input for patients who are suffering from 'sensory overload'. It should be noted that there is a confusion here of reasons for secluding someone (such as their violent acts), and the objectives of that seclusion (which might include reducing his/her level of sensory input). Furthermore, little of this was not said by John Conolly 130 years ago, and the 'theory' seems to be supported by little evidence and is contradicted by some of it. However, these three points probably constitute the major ideas underlying the use of seclusion.

The first of these points speaks for itself, but all will be aware that monitoring of patients who may harm themselves remains necessary, and that recurrent assaultiveness or a deterioration in mental state may accompany seclusion or the return to the ward afterwards (Mattson & Sacks, 1978). We have also seen that some patients add the seclusion episode to their list of delusional misinterpretations. Furthermore, it is far from clear that seclusion, as normally practised as a response to violent or disruptive behaviour, constitutes an effective way of reducing sensory input. Inded, the experience of being secluded is likely to be very stimulating, especially if a struggle or a 'show of force' by staff is involved.

Plutchic *et al* (1978) also compared seclusion with 'time out' (the temporary suspension of access to positive reinforcement), as employed in certain behavioural treatments, since "both procedures involve placing an individual in isolation, contingent upon the occurrence of undesired behaviour". However, with time out, the contingencies are specified in advance and usually agreed with the patient, which is generally not the case with regard to seclusion. Time out is also "brief and standardised in its duration (usually less than 30 min), thus providing a greater number of learning trials . . . [and] designed to minimise the amount of positive reinforcement a patient can obtain". These authors regarded time out as being superior in all these respects, but there is no objective evidence to support this contention, since no study formally comparing the two procedures exists to my knowledge.

A further isolated study of theoretical interest is Rumpler & Siegerman's (1978) case report of seclusion (in physical restraints) used specifically as punishment in a behaviour-modification programme. Given the negative feelings described by many patients in relation to seclusion, it seems possible that punishment is a more appropriate operant learning-theory paradigm for it than time out. Equally, in different units and from one patient to another, it is quite possible that different processes underlie the effects of seclusion. For example, Gair and his coworkers (Gair *et al*, 1965; Gair, 1980) suggested a range of staff rationales for seclusion, varying from punishment to the buttressing of a child's internal controls.

Mattson & Sacks (1978) concluded that seclusion should not be regarded as a treatment in itself, but as a means of providing an "intensive treatment environment" in which medication and simply tiring were to be seen as the important therapeutic modalities.

Perhaps the principal reason for the use of seclusion is the unsatisfactory nature of the alternatives. It is rarely practical to transfer severely disturbed and aggressive patients to other settings immediately, and to discharge them would often constitute an unacceptable risk to themselves and the community, while seclusion will often be considered only after other techniques, such as talking to the patient, have failed. Thus each unit must be able to protect itself and its patients with its own resources. Finally, as Wexler (1982) has reminded us, but as was already clear to Conolly in 1856 and Henry Maudsley (1879), it is by no means obvious that chemical 'restraints' (and I refer here to the deliberate use of medication to retard a patient behaviourally, or to put him/her to sleep for a good part of the day) are less restrictive than seclusion or even physical restraints. Despite the great advances in psychopharmacology in the last 40 years, we may still ask ourselves "whether chemical restraint does permanent good, or whether by diminishing excitement at the ultimate cost of mental power it 'makes a solitude and calls it peace'" (Maudsley, 1879, p. 553).

## Conclusions

We are very short of data on the most effective use of seclusion, and have very little information even on the overall extent of its use, especially in Britain. At present it seems that seclusion is used idiosyncratically, with no regime having been shown to be superior to any other. It is clear that psychiatric patients can be disruptive and violent, and that tradition has hallowed the use of seclusion in dealing with such patients. However, few other treatments that are so widely used for patients with many different diagnoses are so lacking in basic information about their proper use and efficacy. Perhaps it is time for a nationwide review of seclusion practice, like that which proved so revealing about ECT (Pippard & Ellam, 1981).

There is a need for trials of seclusion in different groups of patients, in response to specified behavioural criteria and with the duration of seclusion controlled prospectively. Documentation of the precursors of the target disruptive or violent behaviours, and the characteristics of secluded patients, should be collected in a standardised form, and criteria should be laid down for deciding what sort of control measures are to be used in each instance, rather than this being left entirely to the discretion of the staff on duty. The duration of the 'standard seclusion' to be employed in this regime should be predetermined, and varied only according to predetermined rules. The behaviour of patients in seclusion should be carefully recorded, again in a standardised form, and the effects of release from seclusion should also be noted. Finally, the attitudes of the staff and of secluded and other patients should be examined.

There can be little doubt that such a study would require much negotiation before it could be set in motion, and this administrative difficulty probably explains why it has not been done, but its results both in terms of understanding the local management of patients on the units under study, and in their implications for the management of violent and disruptive patients in general, would be worthwhile.

In the meantime, one can only agree with the Royal College of Psychiatrists (1981), that each hospital should review its policies in regard to seclusion carefully, while we await the answers to some of the important questions that the current use of seclusion invites. However, a certain level of discomfort is appropriate to the use of a treatment that often requires the use of force for its implementation and maintenance, in the absence of clear data as to its most appropriate use or efficacy, and when little specific training is given to members of any disciplines involved in its day-to-day use.

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***Review Article***

# Psychotherapy and General Practice

LINDA GASK and GRAEME McGRATH

The authors review the development of liaison psychotherapy in general practice, and argue that a 'skill-sharing' approach, where the general practitioner retains the treatment role, is a more efficient model than a 'consultation' approach. Skill-sharing models are reviewed, and the need for psychiatrists and psychotherapists to be more directly involved in teaching basic psychotherapeutic skills to general practitioners is emphasised.

As part of the general trend towards liaison between psychiatrists and primary-care teams in the UK (Strathdee & Williams, 1983), psychotherapists are increasingly finding themselves being asked to provide a service in a wider range of settings than before (Wilson & Wilson, 1985). Part of the pressure for this development stems from the increasing recognition that psychotherapy in the National Health Service has a much wider definition and range of application than psychoanalysis or the services offered by specialist psychotherapy units (McGrath & Lowson, 1987). This recognition is accompanied by the realisation of the potential value of the skill and expertise of the psychotherapist working in general practice, using the term 'psychotherapist' in a broad sense to describe professionals from any discipline who employ psychological and psychodynamic treatments for a range of social and psychological problems. In this review we survey the last 30 years, starting with the work of Michael Balint. We argue that psychotherapy has an important role to play in general practice, but that effective models must be tailored to the special needs of professionals and patients in primary care.

## Psychiatrists in general practice

Strathdee & Williams (1983) estimated that almost one in five general adult psychiatrists spent some clinical time in general practice, and one reviewer (Mitchell, 1985) commented that "the momentum continues unabated". The move out of hospitals into general practice clinics has been paralleled in clinical psychology (Kincey, 1974), social work (Carney, 1980) and counselling (Irving & Heath, 1985; Hurd & Rowland, 1985).

Strathdee & Williams identified three distinguishable patterns of working styles adopted by psychiatrists (Strathdee, 1987): the 'consultation', the 'shifted outpatient', and the 'liaison attachment' patterns. This classification contains much overlap between categories, and it seems more economical to talk of 'consultation' approaches, in which the burden of treatment is taken by the psychiatrist, and 'liaison' or 'skill-sharing' approaches, where the aim is to keep the majority of treatment with the primary-care workers.

According to Strathdee & Williams' (1983) data, the large majority of psychiatrists still see and treat the patients themselves. There is no element of skill-sharing or improving the general practitioners' skills for dealing with the 95% of psychiatric morbidity for which the general practitioner (GP) is the main treatment provider (Goldberg & Huxley, 1980). The total number of psychiatrists providing any kind of liaison service is small (154, compared with 29 650 GPs in practice in England and Wales in 1982 (Fry *et al*, 1984)), and in all less than 20 are running Balint groups (see below) or working in such a way that the GP is seen as providing the major part of treatment.

## The Influence of Michael Balint

The history of the liaison between psychotherapists and general practitioners begins with the seminal work of Michael Balint whose book *The Doctor, His Patient and the Illness* (Balint, 1964) revolutionised general practice, and 30 years later remains controversial. At the Tavistock Clinic, Balint ran weekly seminars for groups of GPs, over two or three years. The findings that emerged from these groups can be crudely summarised as follows.

(a) Many presenting complaints were shown to have a psychological basis.
(b) As a consequence, the primary importance of physical diagnosis, with psychological diagnoses being arrived at by exclusion, was challenged.
(c) The potentially potent influence of the doctor's *behaviour* was emphasised; the metaphor Balint used was of the drug 'doctor', which can have both positive and negative effects.

(d) The doctor's "Apostolic function" was clarified. Balint defines this as "the urge to prove to the patient, to the whole world and above all to himself that he is good, kind, knowledgeable and helpful".

(e) The "collusion of anonymity", in which no one doctor was found to be taking responsibility for difficult patients, was revealed and criticised. This had an important influence on the development of thinking about personal care and personal lists in general practice (Pereira Gray, 1979).

These findings are still relevant today, and several of these conclusions are equally relevant for other health-care professionals. Some of Balint's ideas remain highly controversial, however.

Balint saw much of the morbidity presenting to GPs as being of psychological origin, and taught that GPs should aim for a 'deeper' level of diagnosis, understanding the psychodynamic significance of individual symptoms. This led to an emphasis on the key role of psychoanalytical theory, which has been criticised (Sowerby, 1977; Madden, 1979).

The system of training the Balint group developed from this work has been very influential. In such groups, GPs meet weekly for one and a half to two hours, over a period of two or more years. Balint (1964) (p. 303) talks of the considerable change in the doctor's personality that occurs as a result of the group process, and the exploration of the doctor's countertransference with the rest of the group. Perhaps as a consequence of this, the drop-out rate from Balint's early groups was high (60%), although later this decreased to 25–30%.

A key concept in *The Doctor, His Patient and the Illness* is that of 'listening', although this is imprecisely defined, and described in somewhat mystical language:

> "our aim is to help doctors become more sensitive to what is going on, consciously or unconsciously, in the patient's mind when doctor and patient are together. . . . The events we are concerned with are highly subjective and personal, often hardly conscious, or even wholly beyond conscious control; also *as often as not there exists no unequivocal way of describing them in words.*" (p. 302, our italics)

It is part of our thesis that these concepts can, to some extent, be defined and that the objectively observed *behaviour* of both GP and patient can be reflected upon and developed to improve 'listening' skills.

Balint actively encouraged GPs to attempt psychotherapy with patients, and provides some guidance in his book. He recognised the large number of patients seen and supported by GPs for whom formal psychiatric referral had little to offer, but he does not describe clear limits to psychotherapeutic endeavour, or offer clear practical guidelines, and what he suggests is probably more than most GPs would wish to attempt. Nevertheless, his suggestion that many patients benefit from at least one "long interview" has become accepted practice.

In recent years there has been considerable critical backlash against Balint's ideas, and much has been written both criticising and defending his approach. The criticism is on four major counts.

(a) It is suggested that Balint trained doctors to focus too much on psychological factors in their patients, replacing caring with psychological curiosity. Zigmond (1978), in a powerful paper entitled "When Balinting is mind rape", uses the verb 'to Balint', meaning compulsively to offer interpretations to patients who have not asked for them.

(b) From a theoretical standpoint, the central importance of psychoanalytic theory to the exclusion of other aetiological models has been questioned (Sowerby, 1977; Madden, 1979).

(c) Allied to this is concern over whether GPs need to have formal training in psychotherapy. Madden (1979) dismisses this outright, feeling that the case for the importance of psychotherapy to the GP is not made.

(d) It is argued that the system of training in Balint groups requires the demonstration of verbal skills at a level of sophistication that many doctors feel they cannot achieve (Sowerby, 1977).

It remains arguable whether those entering general practice training should be required to have good verbal skills, but Sowerby (1977) suggests that those who have found Balint training unacceptable are viewed as somehow deficient. Madden (1979) seems to assume that psychoanalytical psychotherapy is the only possible form of psychotherapy practised by GPs, and in so doing ignores the considerable range of psychotherapeutic skills employed by many workers in primary care. Balint himself was aware of the need to pitch training at a level that would meet the differing needs and demands of participants, and this remains an important issue. Pietroni (1986) defends Balint as a mentor of the holistic medicine movement, and both he and Williamson (1979) argue Balint's fundamental area of concern was the interactive nature of the consultation, paving the way for the sociopsychological approach to consultation (see below).

## Liaison between GPs and psychotherapists

Following Balint, the development of more direct liaison with GPs by psychotherapists began in the late 1960s in the UK, with Brook (1978). In the model he describes, the psychotherapist becomes a part-time member of the GP's team; as a result of frequent contact, the team can consider together how best to pool their respective skills, and to support one another on the basis of increased understanding of one another's problems. In the 1970s, Brook established a scheme whereby staff (psychiatrists, social workers or psychologists) of the adult department at the Tavistock Clinic were attached to group practices as 'consultants'. As well as seeing referred patients, they carried out joint interviews with GPs, were available to discuss GPs' patients, and attended a weekly meeting at the Tavistock Clinic, which was attended by a member of each practice team. Brook & Temperley (1976) suggested that this approach enabled patients to obtain help earlier than they would otherwise have done, and that a key factor was helping the primary-care team to change their attitudes to patients. Unfortunately, it is unclear from the illustrative case history Brook & Temperley (1976) give, what part the patient's interview with the consultant might have played. Malan *et al* (1975) suggested that under some circumstances a single assessment interview can promote considerable change in a patient, and in view of this and the lack of more objective evidence, Brook's enthusiasm for the therapeutic effect of a change in GPs' skills is difficult to support.

This model, combining elements of both the consultation and liaison models, is important because it emphasises the holistic approach to understanding patients in general practice, does not have analytic theory as a crucial element, emphasises the training of GPs in new ways, particularly using group methods, and finally models skills at a level that is appropriate to the needs of the GPs involved. All these elements are of central importance to any attempt to improve the psychological skills of GPs. Unfortunately, such experiments have so far been mostly confined to the London area. Brook's model has, however, been influential in the development of a more direct liaison between psychotherapists in specialist settings and GPs.

Wilson & Wilson (1985) have described their experiences of liaison with GPs, and discuss with some candour the difficulties that can arise, especially those related to slow development of communication and consequent misunderstandings. Wilson & Wilson suggest that these occur because GPs and psychotherapists have different expectations, both of each other and of the patients. Their examples compassionately and humorously demonstrate the degree of professional tolerance and understanding that is necessary for the success of any liaison.

In the UK, psychotherapists work to a large extent using the liaison approach, but other therapists using psychological treatments, such as psychiatrists, social workers, counsellors, community psychiatric nurses, and psychologists, work primarily within the consultation model, seeing patients referred to them by the GP. Reported studies of interventions by psychologists have largely described behaviourally oriented treatments rather than dynamic psychotherapy (e.g. Earl & Kincey, 1982; Robson *et al.* 1984), although cognitive therapy has also been offered by some (e.g. Ross & Scott, 1985) and, in one study (Blackburn *et al*, 1981), albeit with methodological problems (Goldberg, 1982; Teasdale *et al*, 1984), has been demonstrated to be a superior treatment to antidepressant medication in general practice. Counsellors have offered a wide range of approaches to treatment, the predominant mode being non-directive psychotherapy (Hurd & Rowland, 1985). There are many organisational difficulties in arranging for counsellors to be paid for their work (Rowland & Irving, 1984), and a number work voluntarily. Some practices have established links with organisations such as the Marriage Guidance Council (Martin & Martin, 1985).

There is a considerable need for more evaluation of the effectiveness of such services (Kamerow & Burns, 1987). Early reports, mostly of uncontrolled studies by counsellors (e.g. Anderson & Hasler, 1979) and psychologists (e.g. Ives, 1979; Koch, 1979; Jannoun *et al*, 1981) were enthusiastic in their reports of decreased frequency of consultation and decreased prescribing of psychotropic medication following intervention. Later, controlled studies are more equivocal: Robson *et al* (1984) and Blakey (1986) both report fewer consultations and reduced prescribing following intervention, but Earl & Kincey (1982) found no significant effect on either. Ashurst's (1982) controlled study of the effects of counselling demonstrated benefits in the withdrawal of patients from minor tranquillisers. Carney (1984) examined the effectiveness of social workers attached to GPs in the management of depressed women, and found no significant differences between subjects and controls, although a group of women with acute exacerbations of chronic depression did show some significant improvement. Ginsberg *et al* (1984) and Marks (1985) both report significant clinical and cost–benefit advantages in the attachment of nurse therapists to primary care. In Mark's study patients treated were primarily those with obsessive–compulsive and phobic illnesses, who would otherwise have been referred to a hospital out-patient department.

The attachment of dynamically orientated psychotherapists to primary care has received comparatively little attention. In a prospective, controlled trial of brief psychotherapy in a family practice, Brodaty & Andrews (1983) demonstrated no difference in outcome between patients receiving brief problem-orientated dynamic psychotherapy and groups receiving either therapy from their family practitioner or no treatment. In Norway, a problem-orientated brief psychotherapy service, accepting direct referrals in primary care, produced a significant reduction in admissions to mental hospital (Hansen, 1987). This is one of the only studies describing the outcome of pure consultation model psychotherapy intervention in general practice, and the patients chosen (chronic neurotics) are a notoriously difficult group to treat.

Thus any benefit to patients from direct intervention by mental health professionals in general practice is as yet unproven (Mitchell, 1983). Moreover, the effects of providing a consultation service on either the treatment of patients *not* seen by the liaison consultant, or on doctor–patient relationships in general practice consultations, remain to be demonstrated. Both Brook (1979) and Mitchell (1983) claim that GPs can learn new skills as a result of such attachment, and in Strathdee's (1987) survey of GPs' views of consultation attachments, GPs reported an increase in their knowledge of psychiatric disorders and their treatment. Such claims require objective validation, and so far any changes in attitudes, knowledge or skills of GPs who have collaborated in GP attachment schemes have not been formally evaluated. Some psychologists (Spector, 1984; Salmon, 1984) and psychiatrists (Goldberg, 1986) who are sceptical about the effectiveness of such attachment in improving the psychological care of the majority of patients in general practice advocate a broader educational and skill-sharing role for the mental health professional in primary care.

There are unanswered questions about psychotherapy in general practice. What is meant by psychotherapy in general practice? What are the differences, if any, between psychotherapy skills and consultation skills? What is the point of teaching psychotherapy skills to GPs? To approach these difficult questions, it is necessary to review another area of research into the GP consultation.

## Detection and treatment of psychological illness in general practice

That GPs have a considerable role in the management of psychiatric illness has become apparent over the last 20 years (Goldberg & Huxley, 1980; Shepherd *et al*, 1981), but despite this increasing awareness, Blacker & Clare (1987) comment in their review that much depressive illness in general practice remains undiagnosed and/or untreated, and the problem remains of how to ensure that this morbidity is treated adequately. The basic psychotherapy skills of empathy, sensitivity to emotional cues, clarification, and ventilation of emotion may well increase the accuracy of detection and change this pattern. Understanding the process of the consultation becomes of great importance. There are considerable methodological difficulties involved in studying general practice consultations (Cartwright *et al*, 1976), which have made progress in this area difficult to achieve. Recent technological advances have made recording consultations on audio- and videotape relatively simple, leading to considerable progress in the study of process and outcome of individual consultations. The first analysis of taped interviews between British GPs and patients was provided by Byrne & Long (1976), who draw the distinction between 'doctor-centred' encounters, in which the doctor has a fixed agenda and interrogates the patient along predetermined lines, and 'patient-centred' encounters, where the doctor accurately clarifies the patient's problems and agenda. We would argue that it is possible to teach GPs the skills involved in the latter style of working.

Analysis of verbal interchanges has varied in complexity, from relatively simple models (Byrne & Long, 1976; Marks *et al*, 1979; Gask *et al*, 1987*a*,b), which consider only the form of the doctor's communication (whether open or closed questions are used, whether the doctor used facilitation, reassurance, etc.), to more complex models, designed to classify all communications from doctor and patient by both form and content. The best such model is Stiles' Verbal Response Modes, which has been widely used in both general practice and psychotherapy research (Stiles, 1979). These moves towards observation and definition of behaviour in consultations may ultimately make it more possible to teach and share such skills.

Researchers employing techniques of consultation analysis have explored several lines of inquiry. Raynes (1980) has examined the decision-making process and has demonstrated that GPs tend to adhere to familiar and trusted, but rigid, routines when embarking on investigation and management. Tuckett *et al* (1985) have shown that the 'framework of knowledge' that patients bring to consultations is rarely explored by doctors, and that doctors rarely know whether their patients have understood what they have told them. A large body of literature, reviewed by Pendleton (1983), now links studies of doctor–patient communication with outcome criteria, such as patient satisfaction, compliance and health status.

The related problem of why GPs vary so widely in their ability to detect psychological problems has exercised a number of researchers. Marks *et al* (1979) demonstrated the central role of both the interviewing style of the GP and his/her personality. Goldberg *et al* (1980) found a significant relationship between accuracy of assessment and GP behaviour, including the ability to make good eye contact at the beginning of the interview, clarify the present complaint, ask open questions, deal successfully with talkativeness, and demonstrate empathy. Failure to identify psychiatric problems was associated with missing cues, both verbal and non-verbal, reading notes while patients talked, and focusing questions on the past history. Davenport *et al* (1987) suggest that such behaviour by the GP discourages the patient from revealing symptoms of psychological distress, either by the words used or tone of voice.

### The need for psychotherapy skills in general practice

The fact that important relationships exist between the behaviour of the doctor and the patient in an interview implies that the possession by the GP of basic psychotherapeutic skills may materially improve detection of problems. Psychotherapy in this context is taken to mean the use of specifically psychological skills to detect and treat patients with psychological problems. Our argument is that these are more than just good interviewing skills, as this term is generally understood.

Goldberg & Huxley (1980) relate GPs' behaviour to their accuracy in detecting psychological illness in consultations. Such behaviour included making eye contact at the outset of the interview, clarifying presenting complaints, asking direct questions about physical complaints, being sensitive to verbal and non-verbal cues, and dealing with overtalkativeness. All such behaviour can be defined and readily modified by training. These behaviours are similar to the skills described by Lesser (1985, see his Table 2) in his Problem-Based Interviewing model. GPs can be trained in this model relatively easily (Gask *et al*, 1987*a*,*b*, 1988) and use of these skills improves both detection of psychological problems (Gask *et al*, 1987*b*) and their management in terms of improved outcome (Gask, in preparation).

### Training in psychotherapy skills in general practice

Training GPs in psychotherapy skills thus becomes an important issue. In parallel with the increased recognition of the need for better interview skills training in medical schools (Sanson-Fisher & Maguire, 1980), GP training has moved towards a greater consideration of the psychosocial aspects of the consultation (Freeling & Harris, 1984), and providing more courses on communication skills for trainees (Schofield, 1983). The effectiveness of audio- or videotaped feedback of the doctors' own interviews has been clearly established as the best form of such teaching (Maguire *et al*, 1978). In general practice, peer-group review of audio-taped consultations has been shown to be effective in improving the general interviewing skills of experienced GPs (Verby *et al*, 1979), as well as trainees (Davis *et al*, 1980). Models for such teaching, developed out of research done on the doctor–patient relationship, have been particularly influential in GP teaching. Pendleton *et al* (1984) have developed a method for reviewing tapes, and 'Pendleton's rules' for giving effective feedback (the doctor concerned comments first, the teacher then comments first on strengths, achievements and effective skills, and only later on weaknesses and ways to improve skills) are well known. This model of analysis does not, however, incorporate any method for acquiring or practising new skills during feedback, nor has it been evaluated. Similarly, Tuckett's research (see Tuckett *et al*, 1985), which has led to a model of training that aims to teach doctors to involve their patients to a greater degree in consultations and to improve the educational outcome of the consultation (Boulton *et al*, 1984), has not been evaluated. Perhaps most importantly, none of these models attempts to teach psychotherapy skills as defined earlier. In a review of mental health training in primary care, Burns *et al* (1983) comment that although interview skills training is widely available to trainees, few schemes attempt to teach more specific psychological skills, or formally to evaluate such teaching.

Counselling models have also been influential in GP training, but although most GP trainees are exposed to counselling skills during vocational training schemes (*Journal of the Royal College of General Practitioners*, 1980; Murgatroyd, 1983), the Rogerian non-directive model does not lead to more effective assessment of patients by GPs (Bensing & Sluijs, 1983), and may be more appropriate to the long interview, where a clear counselling agenda is set, than the short interview, where detection and assessment of problems is the prime task.

Training in more formal psychotherapy skills in general practice is available in the UK, and continues to be focused in Balint-group training (Balint, 1979). Many GPs who have a special interest in individual psychodynamic psychotherapy have links with specialist psychotherapy units for training and supervision. Special training for those with an interest in family therapy (Neighbour, 1982), marital therapy, sex therapy (Courtney, 1981), and group therapy is also available, on a somewhat patchy basis, throughout the UK. For many GPs, however, these are special interests that demand a great commitment in time and effort, or provide inappropriate training (Cawley, 1977).

Goldberg *et al* (1980) have demonstrated that such skills can be taught to GP trainees using one-to-one video feedback, and recently Gask *et al* (1987*a*,*b*, 1988) have shown that such training is also effective in a group setting with both trainees and more experienced GPs. These studies taught the problem-based model of both assessing and treating psychosocial problems developed by Lesser (1985), which would seem more appropriate to the general practice consultation than the non-directive approach. This model shares some of the features of Egan's (1982) approach, but is more specifically tailored to medical assessment, and includes specific teaching on management as well as detection. It seems probable that such a model, once taught to experienced GPs, could be taught by them to their trainees, thus obviating the need for specialist teachers and permitting such teaching to be disseminated widely beyond hospital-based teaching settings. We are currently evaluating this teaching model. A number of psychologists who liaise with GPs have now broadened their role to incorporate an important skill-sharing component, as this may prove to be a more effective use of manpower in primary care, and help to meet otherwise unmet clinical needs (Weinman & Medlick, 1985; Cormack & Forrest, 1985). In the Manchester area, a special-interest group of psychologists and GPs has been set up to consider training issues and the role of psychologists in helping GPs to deal more effectively with such issues as benzodiazepine dependence (Cormack, personal communication). This kind of approach has been investigated systematically by Catalan *et al* (1984), who showed that teaching GPs simple counselling skills had measurable benefits in reducing the prescription of minor tranquillisers, without any increase in overall consultation time. This work would be more useful if it had included a clear description of the training offered – in fact there is a general need for studies to include such descriptions.

In both psychotherapy and general practice, outcome research has been slow to develop and is fraught with methodological problems (Wilkins, 1984, unpublished; Freeling, 1985). Yet, if liaison between general practice and other specialties is to be properly evaluated, adequate measures of outcome are essential. The relation between psychotherapy and general practice should be broadly based and educative, rather than the narrow liaison–consultation approach which is common at present, and evaluation will also have to be broadly based, assessing both changes in GP behaviour and skill, and changes in patient outcome following changes in GP behaviour. Assessing behaviour requires techniques for analysing consultations, and the work of Gask *et al* (1987, 1988) demonstrates that this is indeed possible, challenging Balint's (1964) view, apparently shared by many researchers, that "there is no unequivocal way of describing [events in the consultation] in words". Effects of intervention on outcome must be described using such measures as symptom relief, compliance, patient satisfaction and overall cost of treatment. The studies of Catalan *et al* (1984) and Gask (in preparation) have demonstrated clear positive effects of psychological intervention in patients with mixed anxiety and depression, a group which typically receives poor treatment in general medical settings. A broader review of the assessment of teaching in liaison settings is provided by Cohen-Cole (1980), who recommends that the efficacy of teaching be measured using adequately controlled studies, and who offers methodological criteria by which such studies can be designed and judged.

## Providing a range of options

A study of the relationship between GPs and the specialist psychotherapy services in Manchester may provide an important clue to how the relationship between GPs and psychotherapists could develop (Reilly, 1987). 'Many' GPs wanted more information on the services available, 'some' wanted further training and supervision in order to manage more of their patients, while only one GP expressed a strong interest in having a practising psychotherapist. There is no evidence that this model of liaison is either cost-effective or an effective way of improving the psychotherapeutic skills of GPs in general. Nevertheless, within the limitations of staff availability, some departments may choose to work in this way.

General practitioners who are interested in the management of the majority of psychosocial problems seen in primary care, but do not wish to devote a considerable amount of time to formal psychotherapy training, may well benefit from one of the broader-based approaches aimed at teaching basic skills in psychological assessment and management such as the Problem-Based interviewing model (Lesser, 1985). This includes teaching skills in individual, family and marital assessment, and straightforward management strategies with a behavioural bias, and emphasises the GPs' need to understand what other services are available, and which patients can be treated using such models and which need to be referred.

Specific themes and packages of skills can often be taught rapidly, and one-day courses in such areas as interview skills training, psychological approaches to management of patients with AIDS, or helping patients with early alcohol dependence recognise their problems and accept treatment, involve psychological strategies that can truly be regarded as psychotherapies (using our broad definition). These do not necessarily need to be taught by specialist psychotherapists, but could be facilitated by interested psychiatrists or other mental health specialists. For those GPs who wish to develop fairly extensive skills in psychotherapy, and can make a commitment to training, the Balint-type group may be appropriate, but ideally this should offer a clear model of the psychotherapy skills to be taught, and use effective teaching skills, such as audio- and videotape feedback in supervision sessions (Maguire *et al*, 1978). An alternative model has been described by Andrews & Brodaty (1980), in which GPs are offered an extended training of some 26 sessions, including behaviour therapies, marital and sexual counselling, and brief psychotherapy with supervision. We acknowledge that such a course cannot aim to make participants into competent therapists and is no substitute for intensive training.

Despite the range of courses and training opportunities available, many GPs do not wish to be exposed to such teaching. Balint recognised this, and his solution was to provide teaching only for those who would attend. This may not be the most desirable attitude to adopt when the aim of dissemination of such skills must be to improve care of psychological problems in the community as a whole. Possibly the only way to achieve this in the long term is to change attitudes. Closer links with mental health professionals in primary care may help in this task, but in the long run it will best be achieved by proving the effectiveness and the benefits to be gained by careful evaluation of teaching programmes, both in terms of the skills transmitted and their relevance to patient outcome.

## Conclusion

Psychotherapy in general practice settings is now nearly 40 years old, but in many ways the real needs of GPs have not been addressed. Despite the enthusiasm for consultation approaches in the move to more community-orientated care for psychological disorders in general practice, such approaches are severely limited in the extent to which they can help GPs deal with the wealth of psychosocial morbidity presenting to them. More effective strategies involve broadening the definition of psychotherapy, and recognising that every doctor–patient interaction involves emotional communication and requires skills that are psychotherapeutic. Skill-sharing approaches to disseminating these skills among primary-care workers hold the best chance of effective management reaching the appropriate patients, but to do this, primary-care workers need to be taught such basic skills, and a range of options needs to be available, so that teaching can be geared to individual needs. In the short term, this can be done by interested psychiatrists and psychologists, as well as psychotherapists, but in the long term, the most effective way of disseminating such skills might be to teach trainers and supervisors in primary care, who can then pass them on to increasing numbers of their trainees. In addition, the teaching and the effects on patients of any new skills learned must be carefully evaluated.

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**Comment**

# The Toxicity of Antidepressants

GEORGE BEAUMONT

Considerable attention has been paid, both by regulatory authorities and clinicians, to the side-effects of antidepressants, but despite the known high suicide risk in depression, toxicity in overdosage has been largely ignored. On the basis of the evidence currently available, 'older' antidepressants appear to be more toxic than 'newer' agents. A case can be made for limiting the use of some of the older tricyclic antidepressants, especially in patients who remain in the community, when continuous supervision is lacking, in favour of newer, safer drugs.

It is now 30 years since 'antidepressants' as presently understood were introduced. Following the discovery of imipramine, many similar compounds were developed. Around the mid-1970s, compounds having very different chemical structures but similar antidepressant effects emerged from pharmaceutical research.

Attention has focused upon four aspects of the activity of antidepressants: clinical efficacy, speed of onset of action, side-effect profile, and toxicity in overdosage. Available evidence suggests that over the whole spectrum of depressive illness there is no marked clinical superiority of any one antidepressant over another, nor is there evidence of differences of efficacy in respect of selective actions on individual neurotransmitter systems. Similarly, claims for a speedier onset of action for any particular antidepressant have not been substantiated. There is, however, evidence that antidepressants differ considerably in their side-effect profiles and in their toxicity.

Much attention has been paid in recent years, especially by regulatory authorities, to rare, idiosyncratic, often life-threatening adverse reactions. Such considerations led, for example, to the withdrawal of zimeldine and nomifensine, and to the issue of warnings regarding the need for regular monitoring of patients receiving mianserin.

By contrast, toxicity in overdosage has received much less attention, despite the acknowledged potentially high suicide risk in depression, and this crucially important aspect has been virtually ignored at the regulatory level.

## Self-poisoning and antidepressants

Depression is the disorder most commonly associated with deliberate self-poisoning (Weissmann, 1974; Newsom-Smith & Hirsch, 1979; Urwin & Gibbons, 1979). Poisoning is the most common means of suicide in the UK, accounting for 54% of female and 25% of male suicides (Bulusu & Alderson, 1984); the medicinal drugs that have been most frequently used are analgesics, barbiturates, tranquillisers, and antidepressants (Farmer, 1986). About two-thirds of those individuals who successfully commit suicide have visited their family doctor in the previous month, and 40% in the previous week (Robins *et al*, 1959; Barraclough *et al*, 1974).

## Toxic effects of antidepressants in overdosage

Although there are individual differences, the characteristic clinical picture of serious tricyclic antidepressant overdose is one of coma, seizures, hypotension, conduction delay, as demonstrated in the electrocardiogram, and ventricular dysrhythmias (Kulig, 1986). Complications can include a wide variety of arrhythmias – sinus tachycardia, premature ventricular beats, ventricular tachycardia or sade de pointes, ventricular bradycardia, and ventricular fibrillation, and these are important causes of death (Pentel, 1986). Patients who have overdosed with tricyclic antidepressants may therefore require very intensive care. However, not commonly acknowledged is the fact that some 70–80% of individuals who take tricyclic antidepressant overdoses do not reach hospital alive (Callahan & Kassel, 1985; Crome & Newman, 1979; Boldy, 1985). Of the newer 'tricyclic' compounds, maprotiline appears to be pharmacologically and toxicologically similar to its conventional forbears, (Kulig, 1986; Crome & Ali, 1986), whereas the information so far available suggests that lofepramine is much less toxic (Crome & Ali, 1986; E. Merck Ltd, 1987, personal communication).

Of the novel antidepressants, overdoses of both mianserin (Crome & Ali, 1986) and trazodone (Kulig, 1986; Crome & Ali, 1986; Hassan & Miller, 1985) may cause drowsiness, but neither is associated with convulsions or ECG abnormalities. While data on overdosage with 5HT reuptake inhibitors such as fluoxetine and fluvoxamine are limited, experience so far suggests that these agents lack the severe toxicity of the tricyclics (Crome & Newman, 1979).

### Toxicity in overdosage

In animals, fatal toxicity of a drug is expressed in terms of the $LD_{50}$, the dose required to kill 50% of animals on test. Obviously there can be no direct relationship to humans, but nevertheless extrapolation from animal studies has been attempted.

The most common measure in humans is the 'therapeutic index', defined as the ratio of the dose at which there is no more than 5% toxicity to the dose at which there are at least 95% cures. This index has little value in predicting 'fatal' toxicity, but the concept, however, has been used by Girdwood (1974) to determine the fatal toxicity of certain drugs. He defined an index of toxicity as the ratio of the number of deaths reported annually to the number of prescriptions issued per year. A similar index was used by Barraclough (1974) to examine deaths associated with hypnotic drugs. This index has now been extended to cover a wide range of drugs. The index of toxicity is defined as:

$$T=\frac{\text{Number of deaths associated with drug}}{\text{Number of prescriptions for drug}}$$

It can be normalised such that the value of $T$ for quinalbarbitone is 100.

King & Moffat (1983), using statistics for drug-associated deaths taken from the Office Populations Censuses and Surveys (OPCS) mortality tables for 1976 to 1978, devised a table of the indices of fatal toxicity for 47 drugs commonly encountered in self-poisonings. An entry was made for each drug according to the number of deaths with which it was associated, regardless of whether the death was attributed to accident, suicide, or otherwise. For multiple drug consumption, entries were made for each drug named. Prescription statistics for the period were provided by the Statistics and Research Division of the Department of Health and Social Security, and excluded prescriptions given in hospital. Mortality statistics referred to England and Wales, whereas prescription statistics referred to England only. Their consideration, however, was considered to be valid.

Compared with a value of 100 for quinalbarbitone, the $T$ values for tricyclic antidepressants commonly encountered in human poisoning were amitriptyline 11.5, doxepin 11.3, dothiepin 11.1, trimipramine 10.1, imipramine 9.2, clomipramine 6.1, and nortriptyline 5.0.

King & Moffat (1983) state that, as with barbiturates, values for antidepressants provide evidence that $T$ is related to $P$, the *n*-octanol/water partition coefficient, and they consider that the lower toxicity of nortriptyline (5.0) compared with amitriptyline (11.5) is in keeping with the general rule that a metabolite is more soluble in water and less toxic than its parent.

Leonard (1986) suggested that the concern of UK health authorities with the side-effects of the antidepressants nomifensine and mianserin detracted from an ever-more serious aspect of drug toxicity, which he considered had been largely ignored, namely the incidence of antidepressant-induced fatalities.

Since suicidal thoughts and attempts are common in depression, in providing depressed patients with drugs such as the older tricyclic antidepressants that are lethal in overdosage, the clinician was almost "willing the patient to succeed," he claimed.

Leonard (1986) argued not for complacency about the rare occurrence of haemolytic anaemia and agranulocytosis after the administration of therapeutic doses of nomifensine and mianserin, but rather for a more realistic attitude to deaths from self-inflicted or accidental overdosage.

The number of deaths, both intentional and accidental, for various antidepressant drugs for the period 1977–83 for England and Wales was tabulated using OPCS data. When only one drug was taken, the numbers were: amitriptyline 750, dothiepin 376, imipramine 180, trimipramine 101, doxepin 59, maprotiline 58, clomipramine 30, and mianserin 23. When several drugs were taken, antidepressants were implicated as follows: amitriptyline 391, dothiepin 120, imipramine 91, trimipramine 76, mianserin 40, doxepin 37, clomipramine 31, and maprotiline 20.

Such figures however take no account of the frequency of use. Leonard (1986) noted that it was not possible accurately to calculate the number of deaths per million patients treated with the individual drugs, because figures for total numbers of patients treated, duration of treatment, and dose are not available. Nevertheless, assuming an average daily dose of 112 mg for 60 days for tricyclic antidepressants and 45 mg for 60 days for mianserin, it was possible to calculate an estimated death rate per million patients treated, for each antidepressant. The rates were amitriptyline 166, dothiepin 147, maprotiline 115, imipramine 105, doxepin 99, trimipramine 93, clomipramine 34, and mianserin 15.

Leonard (1986) suggested that the general issue of antidepressant safety should be taken into account when regulatory authorities issue warnings about potentially serious side-effects of new antidepressants.

In his view, the incidence of such side-effects should be compared with that for older drugs, so that clinicians can make a realistic assessment.

An example of a newer, but nevertheless tricyclic antidepressant with an apparently very different toxicity profile is lofepramine. Up to 31 March 1987, the estimated number of patients treated with this drug world-wide was 1 017 666, with no known case of death through gross ingestion (E. Merck Ltd, 1987, personal communication).

Montgomery (1987, unpubl.) also estimated that fatalities from overdosage with tricyclic antidepressants ranged between 100 and 150 per million patients treated, whereas the rate for mianserin was only 13. He estimated that deaths from blood dyscrasias in patients receiving mianserin were only at the rate of between 2 and 4 per million patients treated. The incidence of rare side-effects, such as the peripheral neuropathy seen with zimeldine, was about 8 per million. Older tricyclic antidepressants were associated with more deaths than the newer antidepressants, and he felt that clinicians should include this data in their risk-benefit analysis.

It is difficult to obtain data from elsewhere in the world regarding the relationship between deaths from antidepressant overdosage and the volume of prescriptions issued. The dangers of tricyclic overdosage are however well recognised. In the United States, for example, in 1982, it was the third most common cause of drug-related death after alcohol-drug combinations and heroin (Callahan & Kassel, 1985). Cassidy & Henry (1987) calculated a fatal toxicity index on the basis of deaths per million National Health Service prescriptions issued for antidepressants during the years 1975–84 in England, Wales and Scotland. They also calculated indices for the number of standard units and gross quantities of drugs prescribed. All three methods produced similar rankings for the drugs concerned. Cassidy and Henry found that the fatal toxicity index (number of deaths per million prescriptions) for all antidepressants was 34.9. But when drugs introduced before 1970 (essentially tricyclic antidepressants) were compared with those introduced since 1973, there were highly statistically significant differences (with the exception of maprotiline).

The number of fatal poisonings observed and the numbers expected (in parenthesis) for pre-1970 antidepressants were dibenzepin 4 (0.9), desipramine 13 (5.7), dothiepin 533 (372), amitriptyline 1181 (886), nortriptyline 57 (51), doxepin 102 (114), imipramine 278 (342), trimipramine 155 (196), opipramol 2 (3.2), clomipramine 51 (160), protriptyline 6 (20), and iprindole 2 (8.9). The fatal toxicity indices (deaths per million prescriptions) were dibenzepin 157.5, desipramine 80.2, dothiepin 50.0, amitriptyline 46.5, nortriptyline 39.2, doxepin 31.3, imipramine 28.4, trimipramine 27.6, opipramol 21.8, clomipramine 11.1, protriptyline 10.3, and iprindole 7.8.

Similar calculations for deaths observed and expected from the monoamine oxidase inhibitors were tranylcypromine 15 (9), phenelzine 24 (36.7), isocarboxazid 3 (8.2), and iproniazid 0 (0.97).

With the exception of maprotiline, the results for antidepressants introduced since 1973 were very different from those of the tricyclic antidepressants. The deaths observed and expected were maprotiline 83 (77), trazodone 6 (15), viloxazine 2 (7.4), butriptyline 1 (4.7), mianserin 30 (187), nomifensine 3 (42), and lofepramine 0 (3.7). The fatal toxicity indices were maprotiline 37.6, trazodone 13.6, viloxazine 9.4, butriptyline 7.5, mianserin 5.6, nomifensine 2.5, and lofepramine 0 (3.7). Subsequent calculations on more data showed that the fatal toxicity index for lofepramine should be 0.0 (Henry, 1987, personal communication).

Cassidy & Henry (1987) accepted some of the limitations of their data. They acknowledged that there is an assumption that the number of prescriptions issued is a reliable indicator of the availability of the drug in the community. The prescription data were derived from National Health Service prescriptions issued by general practitioners, who may see a selected population of depressed patients. Nevertheless, they believe that their fatal toxicity index is a "useful means of estimating the relative danger or safety of antidepressants". It is acknowledged that the index may be biased by systematic errors in mortality data or prescription data, and by the fact that death was actually due to drug ingestion cannot always be confirmed. When prescribing, the choice of drugs given to patients recognised to be suicidal may be determined by certain assumptions of safety. Some antidepressants may be prescribed for conditions other than depression such as enuresis.

The indices calculated by King & Moffat (1983), Barraclough (1974) and Girdwood (1974) all included deaths due to more than one drug. For this reason their fatal toxicity indices are higher and perhaps less accurate. When recalculated, including only deaths due to one drug alone, for a representative series of antidepressants, the differences for most drugs diminish.

The fact that amitriptyline has been implicated in roughly half of the deaths attributed to tricyclic antidepressants in their own study and in others in the UK and United States is noted by Cassidy & Henry (1987). They point out that:

> "When prescribing antidepressant drugs the doctor usually considers the toxic risks from self poisoning as well as from adverse effects. Regulatory authorities, however, tend to grant licences not on the toxicity of drugs in overdose but on their safety in therapeutic use . . . overall morbidity and mortality related to the drugs could be considered by regulatory authorities when a drug comes up for renewal of licence . . . serious consideration should be given to preferentially prescribing the newer drugs, especially to patients who are considered at particular risk of suicide by ingestion of an overdose of their medication."

Cassidy & Henry's (1987) data reveal some unexpected findings. For example desipramine, contrary to clinical impressions, appears to be more toxic than amitriptyline. Chemically similar drugs such as desipramine, dothiepin, doxepin, and clomipramine seem to have very different toxicities.

Fatal toxicity of antidepressants has been principally attributed to membrane-stabilising activity. The findings for desipramine, Cassidy & Henry, (1987) suggest, may be partially explained by the demonstration that *in vitro* it is a more potent membrane-stabilising agent than imipramine. An additional reason may be that it has been shown to cause seizures in overdosage more often than other tricyclics. Desipramine is rarely a first choice of drug with general practitioners. It may be that its very limited use is reserved for second choice of treatment of 'difficult patients'. Prescribing habits may perhaps also explain the apparent anomalies relating to doxepin and clomipramine, which have similar membrane-stabilising activity to that of other tricyclic antidepressants. Doxepin has been promoted for "the treatment of patients with a wide range of psychoneurotic disorders where anxiety and/or depression are prominent symptoms," and emphasis in the promotion of clomipramine has been placed on the treatment of phobic and obsessional disorders. Patients who have such disorders may be less likely to overdose than pure depressives.

## Cost of care

Most of the information regarding morbidity and mortality resulting from antidepressant overdosage comes from the UK. Despite the acknowledgement that tricyclic overdoses are common, difficult to manage, and often lethal, a determined effort to obtain information from overseas produced very disappointing results. This was mainly due to the fact that in other countries there is no equivalent of the OPCS. It is therefore difficult to obtain reliable estimates about the size of the problem world-wide, and even more difficult to obtain information about the costs of tricyclic overdosage.

The Department of Health and Social Security in the UK provided some valuable information about cost incurred on patients poisoned by psychotropic agents – a wider group than just antidepressants (Department of Health & Social Security, 1986, personal communication). In 1982 there were 30 540 deaths and discharges from hospital from poisoning from psychotropic agents. The mean length of stay in hospital for this group was two days, making the hospital days 61 080. At 1985/86 prices the cost per in-patient day in an acute hospital of over 300 beds was about £99. Assuming that the number of deaths and discharges for psychotropic drug overdosage remained fairly constant from 1982 to 1985/86, the total cost to the health service of poisoning due to psychotropic agents would be £6 million at 1985/86 prices. Certain caveats apply when interpreting these figures. Costs vary from hospital to hospital, and in calculating them the assumption is made that most overdoses are treated at large general hospitals. The costs are based on average in-patient days and do not specifically relate to the in-patient days of overdose patients. Finally, the term 'poisoning' as far as official statistics are concerned covers more than just overdose, including for example 'side-effect'. The figure of £6 million of course does not reflect the cost of general practitioner services or incapacity following discharge, nor does it reflect the economic 'costs' in lost working hours, benefits paid, etc.

## Conclusion

Available evidence suggests that toxicity in overdosage varies considerably between 'newer' and 'older' antidepressants. It is a much more likely cause of death than idiosyncratic side-effects. Yet drugs have been withdrawn from use for the latter reason but not for the former. It is difficult to understand the attitudes that have led to this state of affairs. Since a number of antidepressants are now available that have been shown to be equally efficacious, and to possess a similar onset of action, but to be appreciably less toxic, the continued widespread use of drugs like amitriptyline and dothiepin would seem questionable; if these drugs are to be used at all, such use should be restricted and strictly monitored. In order to reduce unnecessary mortality, depressed patients who remain in the community should be given newer, safer antidepressants.

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**Lecture**

# The Varieties of Human Experience*

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The basic unit of study for psychiatric investigation is the individual human being in interaction with the environment. The psychological understanding of human biography provided by psychodynamic observation is now being supplemented by knowledge derived from phenomenological and neurobiological research. Phenomenology and neurobiology are at present primarily concerned with detecting correlations between clinical syndromes and pathological brain states; they are static rather than dynamic in approach. However, currently emerging techniques of brain imaging aimed at elucidating neurophysiological processes provide the basis for going beyond structural neuropathology to neuropathophysiology. It is suggested that the observations derived from the psychodynamic study of patients constitute markers of underlying brain function, and that the future investigation of psychiatric illness must include a correlative study of both psychodynamic and neurobiological processes.

In his Adolf Meyer Lecture at the 1985 Annual Meeting of the American Psychiatric Association, Dr Michael Rutter (1986) commented:

> "Of Adolf Meyer's many contributions to psychiatric thinking, his emphasis on a psychobiological life history is probably the most important. . . . It has been most illuminating in looking back on his writings to realise how far ahead of the time his concepts were and how directly relevant they are now to modern research and current theorising."

It is not my intention to review the panorama of Meyer's ideas, which were admirably elucidated in Rutter's presentation. I shall instead focus on the significance of Meyer's concepts for modern research, to which Rutter has pointed. In particular, I shall examine Meyer's central notion that the unit of psychiatric study is the individual human being in interaction with the environment, and shall attempt to demonstrate the importance of this clinical approach for modern psychiatric investigation.

## The individual as the unit of psychiatric study

As the text and point of departure for my thesis, let me quote a brief passage from one of Meyer's many publications. In an address given on the occasion of the 100th anniversary celebration of Bloomingdale Hospital in 1921, Meyer (1921) spoke as follows.

> "The human organism can never exist without its setting in the world. All we are and do is of the world and in the world. The great mistake of an overambitious science has been the desire to study man altogether as a mere sum of parts, if possible of atoms, or now of electrons, and as a machine, detached, by itself, because at least some points in the simple sciences could be studied to the best advantage with this method of the so-called elementalist. It was a long time before willingness to see the large group of facts, in their broad relations as well as in their inner structure, finally gave us the concept and vision of integration which now fits man as a live unit and transformer of energy into the world of fact and makes him frankly a consciously integrated psychobiological individual and member of a social group. . . . We study the biography and life history, the resources of adaptation and of shaping the life to success or to failure. The study of life problems always concerns itself with the interaction of an individual organism with life situations. . . . There are in the life records of our patients certain ever-returning tendencies and situations which a psychiatry of exclusive brain speculation . . . and internal secretions could never have discovered. . . . What a difference between the history of a patient reported and studied . . . by the well-trained psychiatrist . . . and the account drawn up by the statistical-minded researcher or the physician who wants to see nothing but . . . chemistry and internal secretions. . . . The psychiatrist has to study individuals and groups as wholes, as complex units, as the 'you' or 'he' or 'she' or 'they' we have to work with. We recognize that throughout nature we have to face the general principle of unit formation, and the fact that the new units need not be like a mere sum of the component parts but can be an actually new entity not wholly predictable from the component parts and known only through actual experience with the specific product."

Here, nearly 70 years ago, is a remarkably clear definition and description of both the biopsychosocial approach to psychiatric illness and the systems theory model, both of which have been written about so eloquently in more recent years (Engel, 1977; Miller, 1978). We should particularly note Meyer's notion that the basic unit of study for the psychiatrist is the individual human being. The proper study of psychiatry, that is, is biography. That is not to say that the neurobiological sciences do not make important contributions to the understanding of human behaviour and psychopathology, but that they supply only partial answers. It does, however, imply that the individual human being is more than the sum of those parts, and that when we shift our attention to the study of the individual as a unit, we find new, unique, and emergent qualities that cannot be predicted from our knowledge of the parts – qualities that must be studied by methods and understood in concepts that are idiosyncratic to the phenomena under investigation.

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*The Adolf Meyer Lecture, presented at the 1988 Annual Meeting of the American Psychiatric Association in Montreal, Quebec.

Let me elaborate on that last generalisation. When we listen to our patients tell us about their illnesses, they will often, if we allow them to, put their illnesses within the context of their personal lives. It then becomes apparent that the illness has occurred in association with an event in their lives – an event that involves changes in important human relationships. It further becomes evident that the patients undergo a reaction to that event with an internally *experienced* response that sets in motion psychological processes that are intimately related to the emergence and nature of the symptoms of their illness. The key words here are *reaction*, *response* and *process*. In saying this, I am, of course, merely mouthing a truism. It is, however, an unfortunate characteristic of truisms that, although honoured in principle, they are forgotten in practice, and I would suggest that, truism though it may be, what I have just proposed is often overlooked and excluded in the practical aspects of our current approach to psychiatric illness.

## The limitations of phenomenology and neurobiology

Those who are familiar with the history of American psychiatry during the past 40 years know that the first *Diagnostic and Statistical Manual of Mental Disorders* (DSM-I) (American Psychiatric Association, 1952) referred to psychiatric syndromes not as *disorders*, but as *reactions*. DSM-I was infused with the concepts of Adolf Meyer, which viewed psychiatric illness as the *reaction* of a human being to a troublesome life event. With the inevitable swing of the pendulum of scientific dialectic, such notions no longer predominate, and have yielded place to different basic assumptions and approaches. In the evolution of psychiatric nosology over the last four decades, in the transition from DSM-I to DSM-III (American Psychiatric Association, 1980) (and its recent revision, DSM-III-R, (American Psychiatric Association, 1987)), the focus of attention has shifted from the living person to his illness as a thing in itself, from dynamic process to static phenomenology, and, to a large extent, from psychology to biology. To oversimplify, one might say that we have given up the motion picture for a photographic still.

It is evident, then, that phenomenology and neurobiology provide the guiding principles for much of what we currently do. Their influence can readily be seen in our official diagnostic classification, in our clinical care of patients, in the curricula of modern residential training programmes, and in the increasingly quantitative character of present-day psychiatric research and scientific papers. To give but one brief example. In 1978 some 36% of the papers published in the *American Journal of Psychiatry* were based on univariate and multivariate statistics; in the first six months of 1987 (nine years later), that figure had increased to 76%.

Let me pursue the nature of that change, and in so doing set forth my basic thesis. It is a major task of modern psychiatry to elucidate the neurobiological aspects of psychiatric illness. We have already made important beginnings towards accomplishing that task. The advances in neurobiology during the past three decades have given us new methods of observing the brain and new facts about its structure that, in concert with modern clinical phenomenology, have allowed us to begin to correlate clinical disorders with underlying brain states. As a consequence, we now have a good deal of reliable information about the association between brain structure and neurotransmitters, on the one hand, and clinical syndromes such as the schizophrenic, affective and anxiety disorders, on the other.

This is, however, only the first step towards our ultimate goal. However useful it has proved thus far, our current methodology has significant limitations that threaten to impede our advance towards further knowledge. Modern phenomenology, I have suggested, is static. With its symptom checklists, its structured interviews and its self-report questionnaires, it collects selected data and uses them to set up criteria for clinical syndromes as objective entities in themselves, and then seeks for their origins primarily in biological terms, speaking, in the most extreme instance, for example, of anxiety as being merely the product of an endogenous, autonomous "biochemical abnormality in the nervous system" (Sheehan, 1982).

In this so-called medical model of psychiatric illness, there is little or no room for Meyer's basic notions of reaction and process, nor, in particular, for the findings of psychodynamic psychiatry, which incorporates and expands on Meyer's notions in its delineation of the process of the formation of psychiatric symptoms. Furthermore, within our current medical model, the neurobiology tends to be as static as its phenomenological correlates. Neurobiological studies have thus far been primarily concerned with structural pathology, aimed at detecting pathological alterations in brain tissue or the location of pathological changes in the quantity of neurotransmitters (Jaskiw *et al*, 1987). They have not in the main been concerned with what initiates such structural change, nor with determining by what complex neural mechanisms, processes, and pathways such change leads to the manifest symptoms of clinical disorders. It is my thesis, first, that in our search for the neurobiological basis of psychiatric illness, we must turn from a structural to a functional neuropathology, must, that is, move from pathological anatomy to pathophysiology, and, second, that the observations derived from the psychodynamic study of patients provide the key to delineating the pathophysiological neural pathways and processes underlying them.

### A clinical biography[1]

I shall come back to that thesis later, but first, I must make an extended clinical excursion. My aim is to delineate the nature of psychodynamic processes, which are so frequently overlooked in modern psychiatric thinking and practice, and to demonstrate that concepts like psychological defences and transference are not "unsupported theory", as is sometimes claimed (Goodwin & Guze, 1984), but are terms for observable phenomena. I have, furthermore, chosen as a patient a woman with a psychotic disorder, to act as a reminder that even in psychosis, where neurobiological factors clearly play such a prominent role, there may be psychological method in the madness.

Our illustrative patient, Mrs Carbone (I have, of course, used fictitious names throughout to preserve confidentiality) was 47 when her distraught husband brought her to the emergency ward of a general hospital because of her bizarre behaviour. A couple of weeks before, she had started hearing odd, unusual noises coming through the pipe and faucet of her kitchen sink, and, she reported, the flush box of her toilet began "to act rather strange", appearing, she thought, to flush frequently on its own. Then she started to hear her doorbell ring in odd and capricious ways, day and night, and all night long she would repeatedly jump out of bed and run to the door to admit a host of angels sent, as she thought, to her house from heaven. To cap the climax, during the night before her admission to the hospital there was, as she said, "a heavy, strong flapping of wings on my kitchen door screen. To me, I said, 'Well, that's the Holy Ghost'" – and she ran down to let him in too. As dawn broke, she began to hear a "blowing noise" through her radio, which she interpreted as being special messages for her, which she felt compelled to write down on scraps of paper. She was vague as to the nature of these messages and would say only that they told her to "destroy this, destroy that, such as destroy the Vatican in Rome – do away with the Pope. It had a lot of religion in it."

A further element of the patient's clinical picture emerged shortly after her admission, during a tape-recorded interview. As she sat down in my office, she pulled out a piece of paper from her handbag and before I could say a word, read me the following 'Manifesto'.

> "I, Grace Carbone, am at the hospital for one purpose and one purpose only. That purpose I speak about was, and is, to please one Miss Mitchell, my social worker. About two months ago I had concluded my talks in person with her. My continued contact with her since has been talking to her over the telephone and writing letters to her. My social worker, Miss Mitchell, kept insisting I talk with a psychiatrist when I had concluded my talks with her in person. I, in turn, kept insisting that I felt it was not necessary, and, therefore, I kept on refusing to do so. My feelings are still the same, but, nevertheless, I am still trying to please my social worker. I, Grace Carbone, want you, Doctor, to remember and do not forget that it was and is Miss Mitchell, my social worker, who chose you. My social worker, Miss Mitchell, and Miss Mitchell alone can choose and do as she and she alone sees fit. Any further talks or any further information concerning myself, Grace Carbone, will have to come from my social worker, Miss Mitchell. She, my social worker, Miss Mitchell, holds the keys to all that has been known and all that can be known. I put myself in her hands, in the hands of Miss Mitchell, and in her hands only. In closing, Doctor, I do hope you will stop being idiots and use your heads for a change. Good day, Doctor. Signed: Mrs Grace Carbone. – That is all I intend to say."

That was certainly an inauspicious start! And Miss Mitchell's role in my clinical work was news to me, since I had thought I was the boss of my own in-patient unit. But the patient's pronouncement gave us a hint that in addition to her hallucinations and bizarre behaviour, she was also deluded. Indeed, a bit of exploration soon revealed the presence of a well formed, grandiose delusional system. The patient perceived herself to be at the centre of a vast universe of professional human beings, angels, and the Deity, designed solely to help and support her. She felt that under divine guidance, she had been directed to Miss Mitchell, who was at the head of a large organisation of psychiatrists, me among them, whom she was controlling and directing for the specific purpose of providing the patient with the help she needed. As the patient put it:

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[1] Part of this case report was reported in Nemiah (1984).

> "I was sent to her, Doctor. I feel and I know that it was the good Lord's doing that got my husband in the hospital there, just so I could go and sit and talk with her. She's the big person here. She's the head. It's up to her to do what she chooses or as she sees fit. Anything concerning me or anything in the psychiatric field, she is at the head – that is the reason I do not want to tell you every little thing. She holds the key to the mystery, which you will never understand."

Let us pause for a moment to reflect on these observations. Let us turn first to the question of the patient's diagnosis. On admission it was readily evident that she was acutely psychotic, and in those more relaxed days of the pre-DSM–III era, she was diagnosed as suffering from *schizophrenia*. At this distance in time it is unwise to be dogmatic about her DSM–III–R diagnosis, but in view of the delusions, hallucinations, ideas of reference and occasional looseness and incoherence of associations, in addition to her bizarre behaviour and deterioration in daily functioning, all of brief duration and without evidence of prodromata, the most likely diagnosis is *schizophreniform disorder*, although in the light of a significant affective component, which emerged later in the interview, one might entertain the possibility of *schizoaffective disorder*.

Suffice it to say that were she a patient in a modern clinical setting, the establishment of a diagnosis by DSM–III–R criteria would provide useful guidelines for her clinical management, especially in regard to the appropriate pharmacotherapy. It would also suggest the nature of the correlative neurobiological substrate underlying the production of her clinical symptoms and signs. We should note, however, that if we restrict our attention to phenomenology, that is, to the form and pattern of those symptoms and signs only, we learn nothing about what possible factors in the patient's life may have played a role in the emergence of her psychosis. To reach that goal, we must turn the focus of our attention away from the *form* of the symptoms to their *content*; we must shift our gaze away from external phenomenology to the patient's inner experience. Let us pursue that path and see where it leads.

What strikes us immediately is the patient's unusual relationship with Miss Mitchell and the depth and quality of her attachment to her. For the patient, Miss Mitchell is a near god-like figure, all powerful, sheltering, protecting, and caring, whose sole concern is the patient's welfare. As the patient said:

> "Through her, I could see the Blessed Virgin. You could call her like three-dimensional. See, the way I look at you now, you're single, you're alone. I see nothing through you. Now with her sitting there, talking with her, I could see through her, which was the Blessed Mother. She was a beautiful woman, with beautiful hair, and as though she was coaching me, telling me the different things to say."

What was the history of this relationship? It had not been of long duration. A year before the patient's own admission, her husband had been admitted to another hospital for the treatment of alcoholism. Mrs Carbone was referred to the social service department, where she met Miss Mitchell, who arranged to see her in thrice weekly psychotherapy, aimed at helping her to deal more effectively with her husband. As the months wore on, Miss Mitchell became increasingly concerned about the patient's growing dependence on her. The concern turned to alarm when the patient began to demand that she be allowed to move into Miss Mitchell's home, and to live with her permanently in order that she might be more securely sheltered and cared for under Miss Mitchell's wing. It was this that had led Miss Mitchell (as the patient had informed us in the 'Manifesto') to insist on psychiatric intervention and, finally, to force the issue, to terminate the therapeutic sessions when the patient refused to see a psychiatrist. Mrs Carbone did not get the message. Although she stopped seeing Miss Mitchell, she did not accept that Miss Mitchell had pushed her away. Instead, in the psychotic fantasies that emerged shortly after the ruptured relationship, she elevated Miss Mitchell to the position of an omnipotent, all-caring, maternal figure, under whose constant guidance and protection she remained happy and secure.

As this history unfolded, one could see that the patient's psychosis, far from being an isolated, autonomous phenomenon, was only one of a series of related sequential events. It was the reaction to the disruption of what was, for the patient, a vital human relationship. Instead of eliciting a reaction of sadness, despair and anger (which is, of course, the usual human response to such an event), the disruption set in motion within the patient a process that led to a psychotic break with reality that enabled her, in psychological terms, to deny the event and to avoid experiencing the pain of the loss.

Let me emphasise again that by enlarging our observations beyond those referable to the form and phenomenology of clinical symptoms, we are able to see that the patient's psychosis is the reaction to the loss of a highly significant human relationship. We do *not*, however, see why the reaction takes the form that it does – why instead of responding to a loss with sadness and anger, the patient developed a psychotic break with reality. It is only when we extend our observations back over the entire span of the patient's life, to include her childhood years, that we uncover events and experiences that allow us to see that the loss of a human relationship was particularly sensitive and difficult for her. Let us, therefore, pursue our exploration with a brief recapitulation of what the patient reported about her earlier life.

When the patient was five and a half years old, her mother suddenly died. The patient was immediately placed in an orphanage until she was seven and a half, at which time her father remarried and took her home again. The move was not successful, relations with her stepmother were stormy, and the patient remembers her life over the ensuing years as one of abuse and neglect. Her marriage at the age of 22 did not improve matters: her new husband turned out to be an alcoholic. Despite a chronic sense of aloneness and despair, she appeared unmoved on the surface and lived a life of silent, stoical resignation. She adhered to a narrow, restricted regime of housework and daily chores with great thoroughness and conscientiousness. She rarely left her house, save to do the shopping, and had no interests or real friends outside her home. She never complained, and if she had any feelings, she kept them entirely to herself. To an observer, she appeared to live a humdrum, routine existence, and to be a person of little passion, few ideas, and no wants – an impassive, spiritless, retiring, lustreless housewife. As the patient said:

> "All my life I've been alone. I lived an empty life, and I did things for the sake of doing them, and not knowing how, I tried the best I possibly could, Doctor. I'd say I was five and a half [when her mother died] – at that time I was put away in a home. My father remarried. I'm still not telling you everything; I'm giving you the highlights. He remarried and I was taken out again, and I led one rotten life, in plain English – one abused, neglected, terrible, wicked life, and it went that way till my marriage. I have been alone. The only person that had any meaning in my life was my mother. She was always there in my mind, in my heart – call it what you like. But the sorrow for her, I always had. I may not have showed it. I never showed it. I never showed feelings. I never had feelings. They may have been hidden without my knowledge – you understand me? But like I say, I only felt pain. So all through my life I was always alone. Alone through childhood, alone through the years after childhood, alone through the marriage. I was married in name only, the way I look at it, and I had a husband who wasn't interested. He thought more of the bottle than he did of me. He never knew what it was to pay a gas bill. The responsibilities were always on my shoulders. I've done that all my life. That's how I ran my whole life. I never griped. I never looked for anything. But one thing I always used to say to myself: 'Some day God will pay me back,' and he did. I never belonged anywhere. I never had a family – I had a family, but it was a family with no meaning. The only one that meant anything was my mother, and I never knew her. She was the only one that would have filled my life, if I had one. It was a broken up family, because of my mother's death, and then just nothing."

In this moving account of the death of her mother some 40 years earlier, we can see the patient's reaction when her little-girl's world was turned upside down by a catastrophic event – a reaction that produced a pattern of behaviour that persisted unchanged into middle age. From the information available to us in the clinical history, it is not possible to describe this behaviour pattern in detail or to determine whether it fulfils the criteria for a DSM-III-R axis I or axis II diagnosis. It is evident, however, that the grief and longing for her mother were never resolved, and that she lived with an inner sense of loss, emptiness, and despair, relieved somewhat by the faith that God would eventually set things straight. It is evident, too, that her emotional development was stunted, that she suppressed or repressed many feelings and curbed the overt expression of those she did experience. It is clear as well that in her relationships with others she adopted an undemanding, uncomplaining, submissive stance, and that in the face of a difficult life with an alcoholic husband, she was resigned and silently long-suffering, stoically and conscientiously attending to the tasks and duties of running her home, joylessly, but without visible resentment or anger. Although we have no evidence that she ever suffered from an overt clinical depressive disorder, her life was certainly a sad one. Clearly, the tragedy of her childhood had had a profound and lasting effect on her entire subsequent life. What is more, it set the stage for another quite remarkable response to a new human relationship – that with Miss Mitchell. We have already seen how Miss Mitchell viewed that relationship, and how it ended. Let us now look briefly at how the patient experienced it.

The patient, it will be remembered, had begun to see Miss Mitchell three times a week for psychotherapy. She felt she had benefited tremendously from these visits, and as a result of them she became, she said, 'a new person in a new world.

Great changes! Spectacular! Wonderful! Words can't express it." A short while later, commenting on the fact that she wanted Miss Mitchell to give me the details of her history, we had the following conversation.

> *Patient.* "I want Miss Mitchell to tell you this. She can tell you everything, because she belongs in this. I was sent to her."
>
> *Doctor.* "Who sent you to her?"
>
> *Patient.* "You'll get all the details; you'll get everything from her. But I will tell you, this pain is in my mind. That I will stress, and the heart has something to do with it also. Because feelings of love was a feeling I never had in my life. I lost my mother at age five and a half, and you might say I went through hell's kitchen the hard way."

When Miss Mitchell entered her life, the patient went on to say, the misery and pain she had experienced throughout so many long years were banished. During the course of her thrice weekly talks with Miss Mitchell, she found a new life, and developed a feeling of abiding love for and a deep sense of oneness with her, that moved the patient to wish to get closer and closer to her.

> *Patient.* "I have to be around her – included in her life. It would make me happier if, rather than go home, I could share living in her house. Just talking to Miss Mitchell made me feel wonderful. The oneness means there's a completion of the love and joy feeling: to work with her, to work around her, to be a part of her life. And like I say, if she wants me to live in with her, that's her business, but that's what I would like. That would give me completeness. In other words, if I had that, I'd face anybody in the world. Nothing would bother me. Feelings of fear, loneliness, or worry would go just like that, because 25 years of married life went like that – no pills, no nothing; they just erased themselves. What's left with me today are the feelings that were left with me when my mother died. Only then I was five and a half – now I'm an older person."
>
> *Doctor.* "What are those feelings?"
>
> *Patient.* "Loneliness, worry, feelings of love."
>
> *Doctor.* "So you've really come to life again. You have picked up where you were when you were five and a half."
>
> *Patient.* "That's right, only like I say, I'm an older person in the same situation."

A moment later, the patient said of her new life and of Miss Mitchell:

> *Patient.* "In this new life of mine, like I told you, I feel like a new woman. All the unpleasant things are gone, and conditions and feelings and such are altogether different now. And it would be nice if it could be shared with someone else. She is the only good thing that's happened to me in my life. My feelings toward her are like I would have, had I had a mother. It made me feel good to talk to her, and she was very understanding, very patient and kind. It really changed my life during my talks with her. . . . And all along the talks I remember different stages where at one time that feeling of love and joy came to me, and when I left the office and ran down 11 flights of stairs, I felt like a 12-year-old kid. I mean, it was a nice feeling – a wonderful experience, and something I never had before. The love I have for the Blessed Mother – the love I have in my heart for God – I have that same kind of love for her. She was always patient and understanding, just like a mother would be . . .
>
> If I could be with her, I'd be the happiest woman in the world. It would be like as though I had a mother, if there was someone that was interested in me – someone I could sit down and talk with, someone that would help me. If there was any good that could come out of me, she'd sure ease the way. We'd work together. In other words, that's the only thing I never had in the past. I never had understanding. There was never anyone I could really talk with. There was never any love. Like I said, the only feelings I felt or knew were that of pain."
>
> *Doctor.* "You're picking up again where you were as a child?"
>
> *Patient.* "Like I say, it's starting off the same way, only now I'm an older person. Instead of five and a half, I'm 47. All I can say, it was a wonderful experience."

With these parting words we must take our leave of the unfolding narrative of Mrs Carbone and Miss Mitchell – not, however, without noting in these final observations evidence of yet another response of the patient to an event in her life. In this instance we see a reaction not to the loss, but to the gain of a vital human relationship – a reaction that set in motion a curious psychological process. In Miss Mitchell, the patient met a kindly woman, who was concerned, caring, and empathic, and who encouraged the patient to confide to her the sad story of her life. Within the warmth of this relationship, the patient's frozen spirit thawed and she rapidly developed a deep attachment to Miss Mitchell. It was not, however, the attachment of one mature, adult woman for another, in friendship. On the contrary, as the patient herself tells us, the feelings of love for her mother that had been so abruptly dislocated some 40 years earlier, when she was five and a half, emerged unchanged into her consciousness – unchanged except for the fact that they had been transferred to Miss Mitchell. But in that transfer they remained literally the feelings of a little girl for her mother, and so distorted the patient's perceptions that she experienced Miss Mitchell in the veritable images in which a child sees a parent – as big, strong, powerful, caring, protecting, and sheltering. Indeed, in spirit and outlook and behaviour, the patient became a child, clinging to Miss Mitchell and at length demanding to move into her house to live with her in total dependency. The evolution of this relationship, of course, also seriously impaired the patient's perception of reality and resulted in a frankly psychotic state, and a psychotic transference when the sudden termination of the relationship recapitulated the earlier loss of her mother. This time, however, the patient could not give up her newfound peace and joy, she could not tolerate the repetition of the pain of such loss, nor could she subside once more into her former loveless state of frozen despair and muted grief. Instead, denying the rupture, she preserved, in fantasy, the loving relationship with Miss Mitchell in her patently psychotic delusions and hallucinations.

### The nature and importance of psychodynamic observation

In this clinical biography, we find much that is illustrative of Adolf Meyer's precepts set forth in his Bloomingdale address, quoted earlier. Let us put these precepts in more general terms. The focus is on the patient in his setting in the world as the unit of study – on the life history of an individual whose interactions determine his capacity to adapt, and shape the nature of his reactions to stressful life events. Furthermore, the subject of observation (the living, experiencing human being) dictates the methods of observation. They are made within the context of a human relationship between the patient and ourselves, in which we must immerse ourselves in the patient's life and must empathically feel our way into his experiences. We are ourselves the instrument that sounds the depth of the patient's being, reverberates with his emotions, detects his hidden conflicts, and perceives the gestalt of his recurring patterns of behaviour. All of this is more easily said than done, for it requires on the part of the observer not only an innate skill, but a knowledge of human psychological functioning, and, above all, a period of apprenticeship and training in the requisite techniques. Finally, we should note that it is inherent in this kind of observation that it demands time and patience. One must listen for an extended period during a clinical interview to the flow of the patient's associations, to detect in his communication the line of melody and the recurrent themes. One can hardly appreciate a symphony if one hears only random, isolated chords.

Using this method of observation in our clinical encounter with Mrs Carbone, we have been able to review the panoramic sweep of her life and to detect in her biography certain "ever-returning tendencies and situations", as Meyer phrased it. Loss and restitution is the theme that permeated her behaviour, her relationships, and her symptoms, and determined the nature of her response to life situations. Behind these responses we find psychodynamic processes leading, for example, to the emergence of her psychotic transference to Miss Mitchell or to the outbreak of her acute psychosis. We should note that it is the techniques of observation based on the concepts of psychodynamic psychiatry that enable us to detect those processes, to see how they lead to the symptoms of a clinical syndrome, and to define and describe them in psychological terms. The processes do not, however, occur in a vacuum. On the contrary, they are, on the one hand, set in motion by events in the patient's social milieu and, on the other, they are manifestations of pathological processes in brain structures. I would suggest that in these psychodynamic processes we have the most immediate markers of the neural processes related to them – that by observing the nature of the function of the brain that occurs simultaneously with the observed psychodynamic processes, we shall be able most accurately and directly to delineate the correlated pathophysiology of the underlying neural structures.

### The correlation of psychodynamic and neurobiological observations

The psychodynamic method of observation is, as I have already suggested, quite different from that of modern phenomenology. With his structured interviews and standardised questionnaires, the phenomenologist imposes an arbitrary structure on the patient's communication that determines its content. The psychodynamic interview, on the other hand, with its emphasis on eliciting the patient's free associations, allows the patient's inner drives, conflicts, and motivations to determine the content of his communication. The phenomenologist's method ensures a completeness and consistency of his data that permit their quantitative and statistical manipulation, whereas the psychodynamic interview opens a window on qualitative, experiential data that provide an understanding of the psychological processes behind symptom formation. Neither method gives the whole story; each provides sets of data that, while partial, are valid in their own right. Furthermore, although they are different, the data sets are not mutually exclusive, but complementary, and when taken together give us a more complete picture of the nature of psychiatric illness.

With that in mind, let me recall my central thesis – the proposition that in our search for the neurobiological basis of psychiatric illness, we must move from a structural to a functional neuropathophysiology, and that in the observations concerning psychopathological processes provided by the psychodynamic study of patients lies the key to delineating the pathophysiological neural processes underlying them. It is an obvious corollary to that thesis that psychodynamic concepts and methods of study must be recalled from their current state of relative exile, otherwise there will be no psychodynamic observations to correlate with their neurobiological counterparts. Neurobiology is now poised on the threshold of developing a truly functional neuropathophysiology, as the investigation of the brain moves from the more static, structural techniques of brain imaging to the new generation of functional imaging techniques that will permit a delineation of dynamic neural processes (Morihisa, 1987). Clearly, the ability to make psychodynamic observations must be solidly in place to match the findings of brain-imaging techniques, when these eventually reach the level of capacity to delineate processes already achieved by psychodynamic methods of observation.

If what I am proposing is to come to pass, we cannot allow ourselves to forget all we have learned over the past century about the psychodynamics of human beings. We must continue to teach and train our residents in psychodynamic psychology on the one hand, as they master the facts of phenomenology and neurobiology on the other. Obviously, each of us will have our predilections for one or another approach, but in pursuing the one we must acknowledge the legitimacy of the others, and must recognise, as I have suggested, that far from being mutually exclusive, they are complementary and mutually supportive, and that all are essential for a full understanding of psychiatric illness and psychiatric patients. None should be allowed to crowd the others off the stage.

This was a lesson repeatedly emphasised by Dr Stanley Cobb, one of Adolf Meyer's most distinguished pupils. Imbued with Meyer's teaching, he was equally at home in the psychodynamic and the neurobiological aspects of psychiatry. Let me close with a passage from his classic monograph, *Foundations of Neuropsychiatry* (Cobb, 1941). His words are as true and relevant today as they were when he wrote them, nearly 50 years ago:

"Those who insist that it is 'impossible' to study human psychology by 'scientific methods' because there are 'too many variables' seem to me unimaginative defeatists. The physiology of the nervous system is certainly the most difficult of studies, especially when the cerebral functions are investigated, but this study is going on and a great deal is being learned. The present difficulty is that many of the workers attack the problem from only one side and do not know enough about other approaches to correlate these findings with those of others. There are psychiatrists who state that neurology can contribute nothing to their field; there are psychoanalysts who are interested only in 'interpersonal relations' and know nothing about the brain; there are neurophysiologists who deny psychology and consider psychoanalysis a 'racket.' In so rapidly an expanding field as that of psychopathology, it is natural that ignorance should breed jealousy and pettiness. What is imperative at present is better training of everyone in all fields – and more tolerance."

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# The Classification of Functional Psychoses and its Implications for Prognosis

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One hundred and eighty-three patients suffering from functional psychoses were diagnosed according to ICD-8, RDC, and DSM-III criteria, and the concordance rates for the diagnoses compared. The heterogeneity of the diagnosis 'schizoaffective psychosis' as defined by these systems became clear. With respect to prognosis, the DSM-III diagnosis of schizophrenia was most closely related to poor outcome. Affective psychoses and schizoaffective psychoses, as well as DSM-III 'schizophreniform disorders', demonstrated a favourable prognosis.

Operationalised diagnostic systems, especially the criteria of DSM-III (American Psychiatric Association, 1980) and Research Diagnostic Criteria (RDC; Spitzer *et al*, 1978), are currently achieving broad acceptance in international scientific psychiatry. Although these new diagnostic systems are more than a mere operationalisation of traditional diagnostic concepts, such as are represented in the psychiatric section of ICD (ICD-8; World Health Organization, 1967), they reformulate these traditional constructs and contain new diagnostic categories, which are in need of validation. In this twofold regard, the relationship of these new diagnostic systems to the traditional diagnostic classification of functional psychosis and the prognostic implications with respect to long-term outcome remain points of interest. A number of studies dealing with this issue have already been published (Brockington *et al*, 1978; Helzer *et al*, 1981; Berner *et al*, 1982; Coryell & Tsuang, 1982; Wittchen *et al*, 1985), of which the majority, however, are concerned solely with the comparison of the diagnostic systems, and do not consider prognostic implications.

In order to contribute to this issue, we used the data of the five- to eight-year follow-up study on former in-patients of the Max-Planck-Institute of Psychiatry in Munich (MPIP), in which different outcome dimensions relating to psychopathological disturbances and social maladjustment were assessed in a standardised manner (Möller *et al*, 1982, 1986*a*,*b*; Möller & von Zerssen, 1986; Möller *et al*, 1988).

## Method

A sample of 239 in-patients with functional psychoses admitted to the MPIP from 1972 to 1976 was selected for the investigation. At the time of follow-up five to eight years after index admission, 183 patients could be re-examined adequately, 13 had committed suicide, and the remainder could not be traced or refused a long interview. Of these 183 patients, 48% were men, 71% were between 20 and 40 years old (6% younger, 23% older), 75% had not been admitted to a psychiatric hospital before the index admission, and 55% were treated for first manifestation of the illness. The mean age was younger for the schizophrenic patients (22.4 years) compared with the patients with schizoaffective and affective psychoses (31.3 and 36.8 years respectively). Male patients were over-represented among the schizophrenics (56.7%), and female patients among the schizoaffective and affective psychoses (62.1% and 57% respectively), but these distributions are expected (Essen-Möller, 1956; Helgason, 1964; Ødegaard, 1971).

The patients were diagnosed according to ICD-8 criteria: 97 (53% of the re-examined sample) were diagnosed with schizophrenic psychoses (ICD 295.0–295.6), 22 (12%) with schizoaffective psychoses (ICD 295.7), 29 (16%) with paranoid syndromes and reactive psychoses similar to schizophrenia (ICD 297 and 298), and 35 (19%) with affective psychoses (ICD 296), most ($n = 25$) belonging to the monopolar depressive subtype. The diagnosis was made by the psychiatrist in charge of the patient. Each diagnosis was controlled by the head of the department or his representative in a weekly case conference. The reliability of this diagnostic procedure proved satisfactory in a former investigation for the main groups of functional psychoses. With respect to the description of these main groups of functional psychoses, ICD-9 is almost completely comparable to ICD-8, which was in use at the beginning of this investigation.

The patients were rediagnosed following RDC and DSM-III criteria. DSM-III-R was not available when this part of the study was started. The information for the diagnoses had to be collected from the case records by a psychiatrist blind to outcome. In nearly all cases the patients could be classified according to RDC and DSM-III criteria. All patients were examined at follow-up by psychiatrists trained in the use of these standardised assessment instruments. For the analysis of the different diagnostic categories, the following measures of outcome were used.

(a) The in-patient Multidimensional Psychiatric Scale (IMPS; Lorr & Klett, 1967; Lorr, 1974) is an observer rating scale for the standardised assessment of psychopathological disturbances, according to factor analysis (Lorr, 1974; Mombour, 1974; Cairns *et al*, 1983). The 90 items of the revised version can be allocated to 12 dimensions, which are comparable to traditional clinical syndromes. To reduce the number of variables, the 12 original factors were combined to give superfactors (von Zerssen & Cording, 1978). The superfactor paranoid–hallucinatory syndrome is a combination of two original factors; the superfactor depressive–apathetic syndrome is a combination of three original factors; and the seven-factor score is a combination of seven original factors reflecting the broad spectrum of psychotic symptoms typical for schizophrenia, similar psychoses, or mania. The ten-factor score is a combination of the seven-factor score and the superfactor depressive–apathetic syndrome, thus covering symptoms of schizophrenia or similar psychoses, and mania as a symptom of depression.

(b) A modified version of the Social Interview Schedule (SIS; Clare & Cairns, 1978; German version: Hecht *et al*, 1987). This is a semistructured interview covering different areas of social role functioning. In each area, objective conditions and social management are assessed separately by the interviewer; in addition, the patient's subjective satisfaction for each social role is stated by himself. For organisational reasons, this instrument was used only in the second part of our follow-up study, therefore the data for a subgroup of 81 patients with an ICD diagnosis of schizophrenia or similar psychoses are missing. For the following analysis, only the SIS areas of occupation, social contacts, and leisure activities were considered.

(c) The Global Assessment Scale (GAS; Spitzer *et al*, 1976) gives a rating of psychosocial functioning, which includes psychopathological status, as well as social functioning in the past four weeks.

(d) A global judgement for rating the impairment of occupational ability (Huber *et al*, 1979; Möller *et al*, 1986*a*).

(e) A global judgement for rating the personality change in the sense of negative symptoms (Möller *et al*, 1986*a*).

(f) The assessment of duration of occupational disintegration (inability to work and disability pension) as a percentage of the follow-up period.

(g) The assessment of duration of psychiatric rehospitalisation as a percentage of the follow-up period.

TABLE I

*ICD–8 diagnoses by RDC diagnoses: numbers of patients and percentages*

| | *Schizophrenia*[1] *(n = 97)* | *Paranoid syndromes/ reactions*[2] *(n = 29)* | *Schizoaffective psychoses*[3] *(n = 22)* | *Affective psychoses*[4] *(n = 35)* | *Total sample (n = 183)* |
|---|---|---|---|---|---|
| RDC schizophrenia | 84 | 17 | 4 | 0 | 105 |
| Percentage ICD group receiving RDC diagnosis | 86.6% | 58.6% | 18.2% | | 57.3% |
| Percentage RDC group receiving ICD diagnosis | 80% | 16.2% | 3.8% | | |
| RDC schizoaffective psychoses | 9 | 7 | 16 | 4 | 36 |
| Percentage ICD group receiving RDC diagnosis | 9.3% | 24.1% | 72.7% | 11.4% | 19.6% |
| Percentage RDC group receiving ICD diagnosis | 25% | 19.4% | 44.4% | 11.1% | |
| RDC affective psychoses | 3 | 2 | 2 | 31 | 38 |
| Percentage ICD group receiving RDC diagnosis | 3.1% | 20% | 9.1% | 88.6% | 20.7% |
| Percentage RDC group receiving ICD diagnosis | 7.9% | 5.3% | 5.3% | 81.6% | |
| RDC depressive syndrome/schizophrenic residual state | 1 | 3 | 0 | 0 | 4 |
| Percentage ICD group receiving RDC diagnosis | 1% | 10.3% | | | 2.2% |
| Percentage RDC group receiving ICD diagnosis | 25% | 75% | | | |

1. ICD–8 295.0–295.6.
2. ICD–8 297, 298.2, 298.3, 298.9.
3. ICD–8 295.7.
4. ICD–8 296.0–296.8.

## Results

With respect to the diagnosis of schizophrenia, there is a close relationship between RDC and ICD, but even better concordance is found with respect to the affective psychoses (Table I). Severe discrepancies can be observed only with respect to the schizoaffective psychoses: more than half the total group of the RDC schizoaffectives comes from other IDC diagnostic groups. The group of schizoaffective psychoses is much larger ($n = 36$) in the RDC classification than in the IDC classification.

Following the DSM-III system, only 69% of the ICD schizophrenics fall into the DSM-III category of schizophrenia (Table II), whereas 85% of the DSM-III schizophrenics also fulfil the ICD diagnosis, demonstrating the narrower concept of DSM-III schizophrenia. Of the ICD schizophrenics, 21% are classified according to DSM-III as schizophreniform psychotics, in most cases because

TABLE II

*ICD-8 diagnoses by DSM-III diagnoses: numbers of patients and percentages*

| | *Schizophrenia (n = 97)* | *Paranoid syndromes/ reactions (n = 29)* | *Schizoaffective psychoses (n = 22)* | *Affective psychoses (n = 35)* | *Total sample (n = 183)* |
|---|---|---|---|---|---|
| DSM-III schizophrenia | 67 | 11 | 1 | 0 | 79 |
| Percentage ICD group receiving DSM-III diagnosis | 69.1% | 37.9% | 4.5% | | 43.1% |
| Percentage DSM - III group receiving ICD diagnosis | 84.8% | 13.9% | 1.3% | | |
| DSM-III schizophreniform disorder | 20 | 2 | 7 | 0 | 29 |
| Percentage ICD group receiving DSM-III diagnosis | 20.6% | 6.9% | 31.8% | | 15.8% |
| Percentage DSM-III group receiving ICD diagnosis | 69% | 6.9% | 24.1% | | |
| DSM-III affective psychosis | 7 | 4 | 14 | 33 | 58 |
| Percentage ICD group receiving DSM-III diagnosis | 7.2% | 13.8% | 63.6% | 94.3% | 31.7% |
| Percentage DSM-III group receiving ICD diagnosis | 12.1% | 6.9% | 24.1% | 56.8% | |
| DSM-III atypical psychosis | 1 | 6 | 0 | 0 | 7 |
| Percentage ICD group receiving DSM-III diagnosis | 1% | 20.7% | | | 3.8% |
| Percentage DSM-III group receiving ICD diagnosis | 14.3% | 85.7% | | | |
| DSM-III paranoid disorder | 1 | 3 | 0 | 0 | 4 |
| Percentage ICD group receiving DSM-III diagnosis | 1% | 10.3% | | | 2.2% |
| Percentage DSM-III group receiving ICD diagnosis | 25% | 75% | | | |
| DSM-III short reactive psychosis | 0 | 2<br>6.9% | 0 | 0 | 2<br>1.1% |
| Percentage DSM-III group receiving ICD diagnosis | | 100% | | | |
| DSM-III schizoaffective psychosis | 1 | 1 | 0 | 0 | 2 |
| Percentage ICD group receiving DSM-III diagnosis | 1 | 3.4% | | | 1.1% |
| Percentage DSM-III group receiving ICD diagnosis | 50% | 50% | | | |
| DSM-III cyclothymic personality | 0 | 0 | 0 | 2 | 2 |
| Percentage ICD group receiving DSM-III diagnosis | | | | 5.7% | 1.1% |
| Percentage DSM-III group receiving ICD diagnosis | | | | 100% | |

the criterion of a duration of six months is not satisfied. Nearly all patients diagnosed with affective psychoses according to ICD received the same diagnosis according to DSM-III criteria (94%). However, the number of patients with the DSM-III diagnosis of an affective psychosis is much larger than the number with ICD affective psychoses, so that only 57% of the DSM-III group have the corresponding ICD diagnosis, the other patients being from different groups. Only two patients in the whole sample are classified as DSM-III schizoaffective, which reflects the fact that this diagnostic category is only an undefined residual group. Patients diagnosed as schizoaffective according to ICD are largely classified under affective psychoses in the DSM-III system; a small portion is classified under the schizophreniform psychoses.

The relationship between the main diagnostic constructs of functional psychosis used in the three diagnostic systems can also be shown by $\phi$ coefficient correlations. A close positive correlation reflects a high concordance of two diagnoses in the sample; negative correlations demonstrate disparity. ICD schizophrenia correlated positively with RDC (0.63) and DSM-III schizophrenia (0.56), but correlated only weakly (0.14) with DSM-III schizophreniform disorder. The correlations with RDC and DSM-III diagnoses of affective disorder were negative (−0.46 and −0.59 respectively), but on a lower level with RDC schizoaffective psychosis (−0.20). ICD schizoaffective psychosis demonstrated the strongest positive relationship to RDC schizoaffective psychosis (0.49), a modest one (0.26) with DSM-III affective psychosis, and a low one (0.16) with DSM-III schizophreniform disorder. Modest negative correlations were found with respect to RDC schizophrenia (−0.29). ICD affective psychosis was most closely related to RDC affective psychosis (0.81) and to DSM-III affective disorders (0.67), whereas the correlations with RDC schizophrenia (−0.56), DSM-III schizophreniform disorder (−0.21) and RDC schizoaffective psychosis (−0.10) were negative.

Kappa coefficients were also calculated, as a stricter measure of diagnostic concordance. The greatest value was found for the relationship between the ICD and RDC diagnoses of affective psychoses (0.81) and, to a lesser extent, between this ICD diagnosis and the corresponding DSM-III diagnosis (0.64). The concordance between ICD schizophrenia and RDC schizophrenia is similar (0.63), whereas the concordance between ICD schizophrenia and DSM-III schizophrenia is very low (0.20). For the schizoaffective psychoses, the concordance between ICD and RDC (0.47) is modest, and the discordance between ICD and DSM-III is obvious (0.20).

## Prognosis

In the first step of analysis, only the GAS score, as the most general criterion of outcome, is considered (Fig. 1). In all diagnostic systems the schizophrenic patients have the poorest outcome compared with patients diagnosed as suffering from an affective or schizoaffective psychosis. Among the three diagnostic constructs, DSM-III schizophrenia demonstrates the strongest association with an unfavourable outcome (GAS score <50), with 51% of the DSM-III schizophrenics fulfilling this criterion. The outcome for patients with an

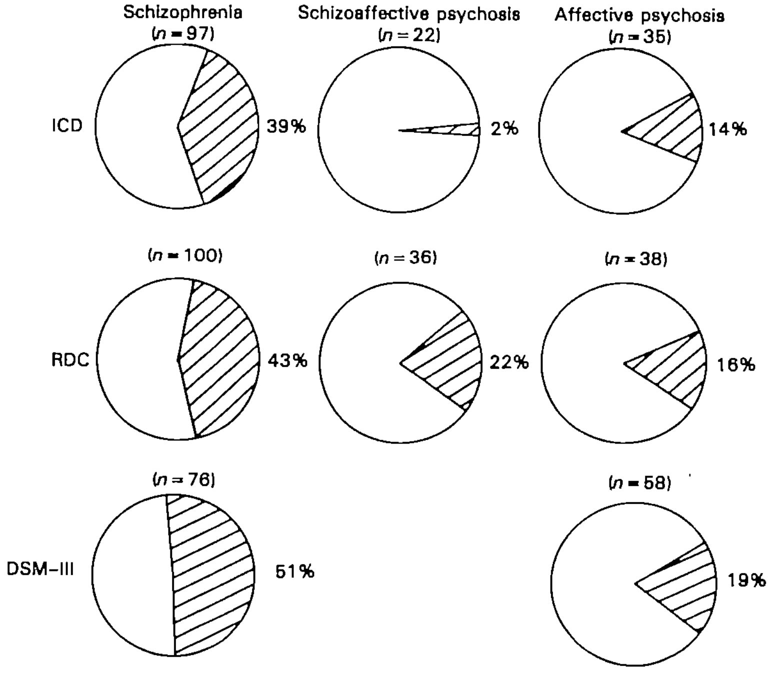

FIG. 1. Prognosis for different diagnoses with respect to global outcome (▨ poor outcome, i.e. GAS score<50).

TABLE III

*Product-moment correlations of the main diagnoses with different outcome criteria*

| | *Global level of functioning (GAS) (n = 178)* | *Impairment of working ability (n = 172)* | *Personality change (n = 164)* | *Occupational disintegration (n = 177)* | *Psychiatric rehospitalisation (n = 160)* | *Paranoid–hallucinatory syndrome (IMPS) (n = 177)* | *Depressive–apathetic syndrome (IMPS) (n = 179)* | *IMPS 7-factor score (n = 177)* | *IMPS 10-factor score (n = 177)* | *Work, study, housekeeping management (n = 89)* | *Social contacts management (n = 99)* | *Leisure activities management (n = 99)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Schizophrenia | | | | | | | | | | | | |
| DSM–III | −0.50*** | 0.47*** | 0.50*** | 0.22** | 0.42*** | 0.34*** | 0.35*** | 0.35*** | 0.43*** | 0.44*** | 0.41*** | 0.43*** |
| ICD | −0.41*** | 0.39*** | 0.45*** | 0.18* | 0.36*** | 0.26*** | 0.18* | 0.25*** | 0.27*** | 0.34** | 0.33*** | 0.34*** |
| RDC | −0.38*** | 0.34*** | 0.36*** | – | 0.25** | 0.36*** | 0.21** | 0.29*** | 0.31*** | 0.40*** | 0.25* | 0.28** |
| DSM schizophreniform disorder | 0.20** | – | – | – | – | – | −0.20** | – | −0.20** | – | −0.21* | – |
| Schizoaffective psychoses | | | | | | | | | | | | |
| ICD | 0.27*** | −0.25*** | −0.28*** | – | – | – | −0.17* | −0.17* | −0.21** | | | |
| RDC | 0.18* | −0.20** | −0.20** | – | – | −0.18* | −0.16* | −0.17* | −0.20** | −0.21* | – | – |
| Affective psychoses | | | | | | | | | | | | |
| DSM–III | 0.34*** | −0.31*** | −0.34*** | – | −0.24** | −0.28*** | −0.16* | −0.21** | −0.23** | −0.32** | −0.26** | −0.33*** |
| RDC | −0.29*** | −0.20** | −0.21** | – | −0.24** | −0.23** | – | −0.18* | −0.17* | – | −0.22* | −0.31** |
| ICD | 0.24** | −0.21** | −0.21** | – | −0.19* | −0.21** | – | – | – | – | −0.24* | −0.25* |

$*P<0.05$; $**P<0.01$; $***P<0.001$.

affective or schizoaffective and schizophreniform disorder is much better – only 20% or less show an unfavourable outcome.

The intensity of the association between a diagnostic category and an unfavourable outcome was calculated by $\chi^2$, where a significant $\chi^2$ denotes that the group with the diagnosis in question has a significantly different outcome as compared with the residual group. The DSM–III category of schizophrenia had the closest relationship ($\chi^2=21.16$, $P<0.01$) to the global outcome, followed by the ICD diagnosis of schizophrenia ($\chi^2=14.98$, $P<0.01$) and the corresponding RDC category ($\chi^2=13.81$, $P<0.01$). Nearly all principal groups of functional psychoses demonstrated a significant association with the global outcome. Apart from the different groups of schizophrenia, the other diagnostic categories were associated with a comparatively favourable outcome.

A more differentiated view of the prognostic implications with respect to multiple outcome criteria is given in Table III. In general, the prognostic implications described by the global outcome are similar for the other outcome criteria. Again, the diagnosis of schizophrenia, primarily the DSM–III diagnosis, is correlated most closely with a poor outcome, whereas the diagnosis of an affective psychosis or a schizoaffective psychosis has a more or less positive correlation with a favourable outcome.

## Discussion

With respect to the ICD and RCD diagnoses, there was good concordance concerning the diagnosis of affective psychoses and, to a lesser extent, for schizophrenic psychoses; larger differences could be observed only for the diagnosis of schizoaffective psychoses. The discrepancies between ICD and DSM-III schizophrenia were much more pronounced. This could be expected because of the differentiation between schizophrenic and schizophreniform psychoses, and the non-existence of a defined group of schizoaffective psychoses, apart from affective psychoses, in the DSM–III system. Only in the diagnosis of affective psychoses was reasonable agreement between ICD and DSM-III demonstrated.

The general tendencies of our results are in good agreement with those in the literature (Brockington *et al*, 1978; Berner *et al*, 1982; Wittchen *et al*, 1985). In the study by Wittchen *et al* there was a better concordance between ICD and DSM–III diagnoses of schizophrenia and schizoaffective psychosis, while the concordance between ICD and RDC with respect to the diagnostic groups was lower. In contrast to our investigation, Wittchen *et al* used a computer program (DIS), and retrospective data from a follow-up examination.

In all three diagnostic systems, the differentiation between schizophrenic, affective, and schizoaffective psychoses has an important prognostic implication, as schizophrenic patients have a poorer outcome. This corresponds with the traditional construct of schizophrenia. It is especially prominent with respect to the DSM-III diagnosis of schizophrenia, which apparently is able to define a nuclear group of schizophrenic psychoses with a poor outcome. This can be explained as a direct result of DSM-III limiting the diagnosis to conditions that have lasted longer than six months.

The ICD and the RDC diagnoses of schizoaffective psychoses and affective psychoses have a comparatively favourable outcome, a result which is in accordance with other recent studies on long-term course of schizoaffective psychoses (see Marneros & Tsuang, 1986). Similarly, the DSM-III schizophreniform psychoses are also associated with favourable outcome, a fact which seems to prove the validity of this concept. In general, the results concerning the prognostic implications of the operationalised diagnostic systems are in agreement with recent results from the literature (Brockington *et al*, 1978; Helzer *et al*, 1981; Coryell & Tsuang, 1982).

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# Family Therapy Influences on General Adult Psychiatry

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Case notes of all patients admitted from two adjacent catchment areas with a diagnosis of schizophrenia, schizoaffective disorder, or psychosis were examined for information concerning the patient's family. On average, case notes contained only 9–25% of the basic information looked for. Family trees were rarely drawn. A record was made of contact with families of only half the sample. It is suggested that information concerning families is not considered of major importance in the management of such cases.

Interest in family therapy has increased rapidly in the last few years (Sluzki, 1987), but although some have welcomed it enthusiastically, it is unclear how much influence family therapy theory has had on the practice of general adult psychiatry.

Many of the early family therapists started their careers with research into the aetiology of schizophrenia (Bateson et al, 1956; Lidz *et al*, 1963; Wynne & Singer, 1963*a*,*b*). The advent of major tranquillisers and the subsequent biochemical theories of schizophrenia moved the spotlight away from research into family interactions. Many of these early workers continued their work on family interaction, and became influential figures in the evolution of family therapy. More recently, the 'Milan' school has described a model of family therapy developed largely from their work with schizophrenic patients (Palazzoli *et al*, 1978).

Currently the field of family therapy contains a number of different schools, but all are interested in interactional communication and behaviour. Therapy focuses on interpersonal process instead of, or as well as, intrapersonal process. Some family therapists will seek information about an identified patient's past relationships, but all will be interested in current relationships with family members of all generations, and other significant people in the patient's social network. Symptomatic behaviour is seen as being perpetuated by recurring patterns of family interaction. There are two major implications of these ideas for general adult psychiatry. Firstly, it is important to have information about all a patient's relatives and his/her relationships with them. Secondly, information gained in a joint interview will be quantitatively and qualitatively different from that gained in an individual interview. Observations can be made of the patient's actual interactions with other family members, and the patient's behaviour and presentation will be different in the context of relevant others.

Family therapists and other professionals are increasingly using pictorial or diagrammatic representations of the family, both as a systematic way of recording information, and as a focus for therapy (Hartman, 1978; Lieberman, 1979; Tomson 1985). If family therapy has influenced adult psychiatry, one might expect to see greater use of such geneograms.

Standard psychiatric practice includes taking a family and personal history. All psychiatrists, whether they consider themselves influenced by family therapy or not, would accept that it is essential to know something of a patient's family medical and psychiatric history, upbringing, and current family relationships.

Support for the importance of such information comes from the research into 'expressed negative emotion' (defined as criticism, hostility and over-involvement) in the relatives of schizophrenic patients. Leff & Vaughn (1981) have shown that high 'expressed emotion' and high 'face-to-face contact' with relatives showing it are associated with high relapse rates in schizophrenia. A programme of treatment designed to reduce these factors, which includes family meetings, has had marked success in reducing relapse (Leff *et al*, 1982, 1985). Other research has confirmed the benefits of family-based treatment in the management of schizophrenia (Falloon & Pederson, 1985).

It is a common experience that the existence of a theory to explain phenomena increases the chance of such phenomenon being recognised (Hill, 1985). Psychiatrists whose theory of schizophrenia includes a family perspective will thus 'recognise' family factors in their assessment. An interviewer's characteristics such as attitudes and expectations can result in biased information (Marzillier, 1976), and, in particular, interviewers will seek information that confirms their own theories. It is logical to conclude that general psychiatrists who have been influenced by family therapy theories will ask questions and seek information which will fit with those theories. It should thus be possible to estimate the influence of such theories by an examination of the questions asked and information sought by general psychiatrists.

With the help of replies from senior adult psychiatrists and family therapists to a questionnaire concerning the information they would seek about a schizophrenic patient's family, it was possible to generate a number of testable hypotheses. It was postulated that the information in histories taken by general psychiatric registrars who had not been significantly influenced by family therapy theory would:

(a) contain incomplete demographic details of the whole family
(b) concern past relationships rather than present
(c) not be represented diagrammatically
(d) have been obtained without:
    (i) seeing other family members, or
    (ii) carrying out joint family interviews

Conversely, if the registrar had had some family therapy training, there should be a greater chance of all the above information being recorded.

## Method

### The setting

The survey was carried out at a large mental hospital in south London. This hospital has acute and long-stay beds, and forms the central point of a well respected and popular general professional training scheme in psychiatry. Registrars on the scheme are of a high standard. Patients are admitted under the care of particular consultants according to the catchment area in which they live. Consultants may have one or two registrars working with them at any one time. Registrars rotate in March and September, and therefore in any one calendar year a consultant may have up to six registrars working with him/her. When patients are discharged, registrars are expected to complete a discharge summary which follows the format of the *Notes for Eliciting and Recording Clinical Information* (Institute of Psychiatry, 1979).

### The sample

The sample consists of all patients admitted to the hospital from two separate inner-London catchment areas in 1986 with a diagnosis of schizophrenia, schizoaffective disorder, or psychotic reaction. Patients with drug-induced psychoses were excluded. If patients were admitted more than once, information from the first admission only was used. In all, 171 people were admitted, of whom 47 met the above criteria; all were included in the study (27 women, 20 men, age range 18–63 (mean 36.1) years).

### Data analysis

A data sheet was devised which enabled patients' case notes to be examined in a standardised way. Hand-written notes and typed discharge summaries were examined for the presence or absence of certain items of information, not the information itself, for example whether or not a name was recorded, not the name itself. Information was sought concerning parents and grandparents and, where it was possible to know that such relatives existed, siblings, children, partners, ex-partners, and in-laws.

The presence or absence of information about relatives' names, ages (or dates of death), sex (where not obvious, e.g. parents), occupations, physical health, personality, and past and current (within previous 12 months) relationship with the patient, was recorded. Information was recorded as present even if only the briefest mention was made. Information was discounted concerning marital status of parents and grandparents, as in all but two cases it had been simply assumed that parents were married. This leaves a possible 24–69 items of information that could be recorded concerning a particular patient, depending on the number of that patient's relatives.

If under the headings 'Personal history' and 'Family history' the discharge summary referred to previous summaries, then these were used to complete the data sheet. Summaries more than five years old were deemed out of date, and were not used.

## Results

### Demographic details

The quality of recorded information was such that it was not always possible to tell who was in the family, let alone

TABLE I
*Number of cases where information was available (n = 47)*

| | *Mother* | *Father* | *Siblings* | *Partner* | *Children* |
|---|---|---|---|---|---|
| Some information recorded | 34 | 33 | 33 | 12 | 11 |
| Recorded that no such relative exists | N/A | N/A | 0 | 15 | 17 |
| Relative exists but no information recorded | 13 | 14 | 9 | 6 | 3 |
| Cannot tell whether relative exists | N/A | N/A | 5 | 14 | 16 |

TABLE II
*Type of information recorded*

| | *Number of cases with information recorded* | | | | |
|---|---|---|---|---|---|
| | *Mother* (n = 34) | *Father* (n = 33) | *Siblings* (n = 33) | *Partner* (n = 12) | *Children* (n = 11) |
| First name | 0 | 0 | 5 | 4 | 5 |
| Age/date of death | 22 | 19 | 20 | 3 | 10 |
| Sex | N/A | N/A | 33 | N/A | 11 |
| Marital status | — | — | 11 | N/A | 8 |
| Occupation | 18 | 19 | 8 | 4 | 8 |
| Physical health | 7 | 6 | 3 | 0 | 0 |
| Personality | 3 | 3 | 0 | 0 | 0 |
| Past relationship with patient | | | | | |
| frequency | 1 | 0 | 0 | 0 | 1 |
| quality | 3 | 1 | 0 | 2 | 0 |
| Current relationship with patient[1] | | | | | |
| frequency | 1 | 1 | 3 | 2 | 3 |
| quality | 8 | 2 | 3 | 7 | 0 |

1. The mothers of 10 patients and the fathers of 15 were known to be deceased. This information about current relationships concerns a maximum of 24 cases for mothers and 18 for fathers.

analyse data about family members. In a number of cases it was obvious from the case notes that certain relatives existed, but no information was available (Table I). In no single case was all the information about a particular relative present.

On average, case histories contained only six of the items of information examined in this study (9–25% of the total possible information, depending on the number of relatives). In three cases there was no information about any member of the family. In each case there was no record of any family data in the hand-written notes, and the typed summary referred to previous summaries. In one case, a sequence of similar comments from numerous summaries finally led to some family data ten years old. In the other two cases no 'previous summary' could be found which contained any family data!

There was a lack of systematic recording of information. Histories with much information about, for example, a patient's mother, would have none about the father. Where information had been recorded, the mother, father, siblings, and partner each had an average of two items of information, and the children four items. Further details about the type of information recorded are set out in Table II. It is of interest to note that there was only one reference to expressed emotion in these 47 cases.

### *Parents*

There was no information at all about 13 mothers and 14 fathers. In nine families there was no information about mother or father. The most likely items of information to be recorded were age and occupation.

No reference to adoption was found at any point in the study. Patients were assumed to be the biological children of their parents, but there was no evidence that this assumption was tested.

Little information was available about relationships, past or current. No statement about the quality of a relationship was of more than one sentence, and some were briefer. With one exception comments were made only about poor relationships, and all comments gave the identified patient's perspective only. Typical examples were: "Don't get on well", "hates her parents", "not good", "relationship strained".

### *Siblings*

In all cases where information was recorded about siblings, their sex was recorded. This was nearly always in the form of a statement like "the patient was the youngest of three siblings, two sisters and a brother". This was the single most likely piece of information to be recorded about the patients.

### *Partners*

Perhaps not surprisingly, information about current relationships was more likely to be noted with respect to partners than any other relatives. In all cases, comments were brief (one sentence or less) and concerned poor relationships.

### *Children*

More information was recorded concerning children than any other type of relative, but very little was about current or past relationships. If the identified patient was male, no reference was made to child care. There were five female patients known to have children of school age or less. In two, no reference was made to child-care arrangements during admission. In the other three, brief mention was made (one sentence only), and in one all that was said was that there was no one to look after the children! As with parents, assumptions were made but not tested that all children were biological offspring and not adopted.

### *Other relatives*

In 22 cases it was not possible to tell whether an ex-partner existed. In the three cases where such a person was known to exist, no information was recorded. No information was recorded about paternal or maternal grandparents, with the exception of one case where a brief reference was made to the frequency with which the subject visited his grandmother. There were no cases with any information recorded about the family of a patient's partner.

## **Family trees**

Diagrammatic representations of the family were found in only seven of the case histories. Four of these showed two generations, two showed three generations, and the last only one generation – the patient and his sibling. None of the three where the patient had a partner showed the partner's family. Only one showed the partner.

### Contact with other family members

Joint interviews were noted in nine cases. In four cases the patient's partner was seen, in the other five, parents were seen. In one of these cases siblings were seen as well – the only whole family interview referred to in 47 cases.

Reference was made to other family members being seen separately in 19 cases, usually parents or partners. In all, members of the families of 24 patients were seen either with the patient or separately. Usually, relatives were seen by the psychiatric registrar responsible for taking the history. Occasionally they were seen by the consultant, with the registrar present to make notes, for example at the ward round.

In ten cases life events within the family were felt, by members of the hospital team, to have played a major role in precipitating admission. These events were varied, and included such things as separation from partners, accidents to other family members, and changes in living arrangements of the family. In all cases the event necessitated a reappraisal by the patient of his/her relationship to the family. There was no greater likelihood of family contact by the hospital team in these families.

### Registrar training

Thirteen psychiatric trainees were responsible for taking histories in the 47 cases studied. Five trainees were responsible for 33 of the histories, the remaining eight taking just one or two histories each.

There were no significant differences between trainees concerning the amount of information recorded, use of family trees, or contact with relatives. Four of the five trainees responsible for the bulk of the history taking were contacted about their family therapy experience (the fifth had moved to Australia). Only one had received any formal teaching, and this just a few seminars within a course for the membership examination of the Royal College of Psychiatrists. Three of the four had observed family therapy take place, two in child psychiatry settings, and the third in a specialist unit for the treatment of anorexia nervosa. None had seen it used with general adult psychiatric patients.

## Discussion

The aim of this survey was to examine the influence of family therapy theory on general adult psychiatry by examining the questions asked by general adult psychiatrists about families. Besides their own personal theories, another major influence on psychiatric history taking are the guidelines published in major textbooks. A brief review of the standard texts in the local postgraduate library (Sim, 1974; Mayer-Gross *et al*, 1977; Maguire, 1983; Mullen, 1986) showed that their history-taking schemes were similar to *Notes for Eliciting and Recording Clinical Information* (Institute of Psychiatry, 1979). Information concerning families is compartmentalised into two sections. Facts about age, health, and personality of parents and siblings are gathered in the 'family history', facts about spouse(s) and children in the 'personal history'. Details are commonly sought concerning past relationships with parents and spouses, but less frequently with siblings, and rarely with children. Information concerning grandparents is almost never sought, and the families of partners are rarely mentioned. Only a few schemes suggest discussing current relationships with relatives other than parents and partners, as opposed to past relationships.

It is usually recommended that information is obtained from an interview with the patient alone, but corroborated by interviews with other relative(s) who are seen as more 'objective'. No proformas suggest joint interviews, and some discourage this.

An assumption was made that psychiatrists would already be recording basic family information such as age, sex, health, occupation, etc., of immediate family members such as parents and partners. The influence of family therapy would be gauged in part by the completeness of such information for all family members. These assumptions were not borne out. The amount of recorded information concerning all family members was very low, despite standing instructions within the hospital surveyed for all discharge summaries to include such information.

It is probable that more information was known at the time of admission and treatment than was entered in the notes. Information about personality, which is difficult to summarise in a few brief sentences, might have been rejected as too time consuming to record, although it was discussed. This does not explain why easily recordable data such as name, age, and sex were not noted. However, it must be assumed that only that information considered relevant is recorded. If information is known but not recorded, this must reflect the low value placed on it by psychiatrists.

It was not the case that information in other areas was equally poor: hospital notes and summaries appeared to contain ample data concerning the mode of presentation, the patient's mental state over time, and efforts to alleviate the patient's problems. Such efforts usually involved a combination of medication and practical arrangements concerning work, accommodation, and discharge. Very little contact with family members was recorded, and there was a record of only one meeting of all family members that was planned specifically as a therapeutic event. No references could be found to specific attempts to decrease expressed emotion in relatives. This is surprising as in nearly a quarter of the cases family events were thought to have precipitated the crisis which led to admission. It is hard to avoid the conclusion that one of the reasons for the paucity of recorded family data is that family issues are not seen as relevant in patient management.

There was a marked lack of systematic procedure in recording family information. The presence of a large amount of data concerning one relative did not predict similar data concerning others.

Negative findings were rarely recorded; thus it was unclear whether an absence of information on, for example, siblings, meant an absence of siblings or an absence of questions from the history taker concerning siblings. Very few geneograms were drawn, and those that were contained incomplete information, suggesting a rather limited view of what constitutes the family, and a lack of interest in the possible influence of the wider family network on an individual. Jolly *et al* (1980) have shown that the geneogram is a simple technique to teach, and that it rapidly increases the amount of information which historians record without increasing time taken. Psychiatric history takers should, perhaps, consider using this technique more often.

At a more general level, attention should be paid to the ways in which information is recorded. In the three cases where there was no information at all about the families of three patients, the notes had referred to previous summaries. Moreover, this practice of referring to previous summaries suggests that families are seen as static, although in fact a changing family situation was thought to have precipitated admission in ten cases.

In conclusion, the hypotheses that family histories would contain incomplete demographic details, not be represented diagrammatically, and have been obtained without seeing other family members, were confirmed. Information did concern current as well as past relationships, but was mostly concerned with the amount of contact rather than the quality of interaction. Too few registrars had been exposed to family therapy to examine the fifth, converse hypothesis.

Overall, the paucity of information concerning families was such that not only did there seem to be a lack of influence from the various schools of family therapy, but that even the traditional psychiatric view of the family's influence on the patient was being neglected.

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# Social Support and the Outcome of Major Depression

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One hundred and fifty middle-aged and elderly adults with a diagnosis of major depression were assessed initially as in-patients, and were reinterviewed 6–32 months later. Both size of social network and subjective social support were significant predictors of depressive symptoms at follow-up, with baseline depression scores and other predictors of outcome status statistically controlled. Subjective social support was most strongly associated with major depression; this effect was significantly stronger for middle-aged than older adults, and for men than women. Differences in the effects of marital status, size of social network, and subjective social support also suggest the importance of distinguishing between involvement in and quality of interpersonal relationships.

A review of the literature reveals an increasing interest in the outcome of depressive illness. Although evidence is limited, previous research consistently indicates that the outcome of depressive illness is variable, and that sustained recovery is less common than had been expected (Keller & Shapiro, 1981; Keller *et al*, 1982; Murphy, 1983; Baldwin & Jolley, 1986; Carney *et al*, 1987). Keller *et al* (1982), for example, found that only 50% of 101 in-patients had recovered from their index episodes of depression at one-year follow-up. Similarly, Murphy (1983) reported that only a third of a sample of 124 elderly depressed patients had recovered one year after their index episodes. Given this variability in outcome, and the poor prognosis for many depressed patients, it is important to identify factors associated with different outcomes.

Only limited information is available concerning the risk factors for recovery from depressive illness. The types of risk factors examined in one or more previous studies include clinical features of the index episode, patients' personal characteristics, life events during the interval between baseline and follow-up assessments, and the availability of supportive interpersonal relationships. At this point, no consistent markers of recovery have been identified. Carney *et al* (1987) reported that the presence or absence of melancholia failed to distinguish between poor and good outcome. In a six-month prospective study, Zimmerman *et al* (1987) found that the dexamethasone suppression test (DST), which was administered during the first week after admission to primary unipolar depressed patients, was not associated with any of the outcome variables studied (including the Hamilton Rating Scale, the Beck Depression Inventory, and the Global Assessment Scale).

Few investigators have studied the predictive power of patients' personal characteristics or the experience of life events for recovery status, although the limited research available suggests their potential relevance. Baldwin & Jolley (1986), in a study of 100 severely depressed elderly in-patients, reported that only two factors were associated with recovery status: males and persons in poor physical health exhibited significantly lower rates of recovery. In another study of elderly depressed in-patients, Murphy (1983) reported that the experience of stressful life events between the baseline and follow-up assessments was related to poorer outcomes.

Social support has been perhaps the most frequently examined factor in relation to differential outcome of psychiatric disorder, although the results of previous studies are inconsistent. In a longitudinal, community-based study, Holahan & Moos (1981) reported that decreases in social support over a one-year interval were associated with increased psychiatric symptoms. Pattison *et al* (1979) reported that social support can help to alleviate symptoms of anxiety, but added that the salubrious effects of supportive relationships are contingent upon the support network being "normal" rather than "pathologic". In a longitudinal, community-based study, Henderson examined the effects of both objective (i.e. network size) and subjective (i.e. perceptions of adequacy) social support on neurotic symptoms (Henderson & Moran, 1983; Henderson, 1984). Henderson & Moran (1983) reported that objective social support is unrelated to changes in symptoms, but perceptions of inadequate support are associated with both the onset and continuation of symptoms. Henderson (1984) suggested, however, that conclusions about the impact of social support be restricted to evidence based on objective dimensions, because subjective measures may be contaminated by depressed affect. Finally, Murphy (1983) reported that the presence of a confidant neither protected the elderly depressed patients in her sample against relapse, nor promoted recovery.

Overall, then, previous findings fail to identify factors consistently related to recovery from depressive illness. The methodological limitations of these previous studies also must be recognised, however. First, a number of them, especially those examining the effects of social support, were based on community samples, in which the prevalence of significant depression is low. Second, several studies reviewed (again, primarily those examining the effects of social support) focused on measures of neurotic symptoms, general psychopathology, and anxiety. Consequently, additional effort is needed to examine the factors associated with recovery from depressive illness. Third, in all previous studies, examination has been restricted to one or two potential correlates or predictors of outcome – no effort has been made to examine a broader range of the potential factors. A corollary of this pattern is failure to examine the potential predictors of outcome in a multivariate framework.

The present study was designed to overcome some of these limitations. Six categories of factors potentially related to the outcome of depressive illness were examined: patients' demographic characteristics, patients' psychiatric histories, clinical features of the index episode of depression, psychiatric comorbidity, life events, and social support (as measured in multiple dimensions). Subjects consisted of 150 middle-aged and elderly depressed in-patients who were administered baseline interviews during their index hospital stay, and were reinterviewed 6–32 months later. Although a wide range of potential predictors of recovery status was examined, our primary interest was in the effects of social support. Consequently, our major hypotheses were that impaired social support at baseline would be associated with poorer outcome, and that subjective social support would be more strongly associated with recovery status than more objective social support dimensions.

## Method

### Sample

Our sample was taken from in-patients participating in the Duke University Center for the Study of Depression in Later Life, a multidisciplinary research programme, designed to contrast the phenomenology of depression in middle (age 35–50 years) and later (older than 60) life. All patients were screened for significant depressive symptoms: this involved a check of patients' charts for psychiatric diagnoses, and administration of the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). Those patients with a diagnosis of affective disorder and/or a CES-D score of 16 or greater were enrolled into the research programme. A score of 16 or more on the CES-D has been shown to be indicative of clinically significant depressive symptoms (Radloff, 1977).

After a patient 'passed' one or both of the screening criteria, a clinical psychologist administered the Duke Depression Evaluation Schedule for the Elderly (DDESE) (a composite interview schedule). Diagnostic information was obtained using several sections of the Diagnostic Interview Schedule (DIS) (Robins *et al*, 1981), including the sections on depression, mania, alcohol abuse/dependence, generalised anxiety disorder, and the Mini-mental State Exam (Folstein *et al*, 1975). We enriched the DIS depression section by adding items on sleep problems, and items to distinguish both major depression with and without melancholia, and depression with and without psychotic features. DDESE and screening data were reviewed by a diagnostic team, and standardised DSM-III (American Psychiatric Association, 1980) diagnoses assigned to all participants. These standardised diagnoses have been compared with diagnoses derived from interviews using the Schedule for Affective Disorders and Schizophrenia (SADS) (Endicott & Spitzer, 1978), in which the clinical interviewers were blind to the DDESE and screening data, as well as to the standardised diagnoses based on those data. Comparisons of the standardised and SADS diagnoses indicate high concordance for the diagnosis of major depression ($\varkappa > 0.80$), and acceptable concordance for the distinction between major depression with and without melancholia ($\varkappa > 0.60$).

Follow-up interviews were conducted by telephone after 6–32 months. The interview schedule included the CES-D, other questions about depressive symptoms and symptom episodes, questions about medication and use of mental health services, and measures of social functioning. Of the 200 patients contacted, 177 participated in the follow-up interview. Four subjects had died, five were not competent to report reliable data, and 14 refused. One hundred and fifty of the 177 participating subjects had received a standardised diagnosis of major depressive episode, with ($n = 56$) or without ($n = 94$) melancholia at baseline. These 150 subjects comprise the sample used in this paper. Compatible with the research design, these 150 subjects are in two age groups: 35–50 years ($n = 77$) and 60+ ($n = 73$).

### Measures

*Outcome of depression.* The dependent variable is outcome of depression as measured by CES-D score at follow-up. For some analyses, the CES-D is used in continuous form (potential range = 0–60). For other analyses, the CES-D was split into two categories: 'recovered' (CES-D $\leq 15$) and 'non-recovered' (CES-D $\geq 16$). As noted previously, this cut-off point is compatible with that used in previous studies (Radloff, 1977).

Six categories of independent variables were included in the analyses.

*(a) Demographic characteristics*. Three were examined: sex, marital status, and age (35–50, and 60+ years).

*(b) Psychiatric history*. Three measures were examined: presence v. absence of (i) family history of suicide, (ii) family history of mental disorder, and (iii) a previous episode of major depression. All three measures were based on patients' self-reports in the DDESE.

*(c) Clinical features of the index episodes*. Three features were examined as potential predictors of recovery status: baseline CES-D score, duration of the depressive episode before the baseline interview, and presence v. absence of major depression with melancholia. Baseline CES-D scores were included as indicators of disease severity; in addition, in the multivariate analyses, we controlled on baseline CES-D scores to highlight the effects of other predictors on *changes* in levels of depressive symptoms. Duration of the depressive episode was viewed as an indicator of chronicity and was assessed via patients' self-reports at the baseline interviews.

*(d) Psychiatric comorbidity*. To determine whether coexisting psychiatric conditions decreased the likelihood of recovery, we examined presence v. absence of three other DSM–III diagnoses: dysthymia, alcohol abuse and/or dependence, and generalised anxiety disorder. Diagnoses were based on the DIS sections included in the DDESE. Presence v. absence of mild cognitive impairment was determined on the basis of responses to the Mini-mental State Exam.

*(e) Life events*. The DDESE included a 19-item life-events checklist. This list, previously used in the Duke Epidemiologic Catchment Area surveys (Blazer *et al*, 1987; Hughes *et al*, 1988*a*,*b*), asks respondents about the occurrence of life events during the past year. The events listed include health events, marriage and family events, work-related events, financial problems, residential relocation, interpersonal disruptions, and legal problems. For each event reported, respondents also were asked to rate the event as negative or positive, as important or unimportant, and as expected or unexpected. For the purposes of this paper, two measures of life events were examined: number of positive events (coded as none or one v. two or more) and number of unexpected, very important, negative events (coded as none v. one or more). These measures permitted us to determine whether positive experiences promote recovery and whether stressful events predict poorer prognosis.

*(f) Social support*. Finally, the Duke Social Support Index (Landerman *et al*, 1989) was used to generate information about four dimensions of social support. (i) Size of social network is measured by four items, including an indication of complexity. (ii) Amount of social interaction is a four-item index, measuring the frequency of the respondent's interaction with members of the support network. (iii) Instrumental support is a 13-item index, tapping tangible services that the respondent receives from network members. Examples of the tangible services included are help when sick; financial assistance; help with housework, home repairs, and meals; transportation; gifts; and advice about problems. (iv) Subjective social support is a nine-item scale, tapping the respondent's perceptions of: his/her inclusion as a valued and useful member of a social network; whether the network would provide help and support if needed; and general satisfaction with the quantity and quality of social support available. Each dimension was categorised as impaired (scores in bottom fifth of scale) v. unimpaired support. Note that the first three measures tap relatively objective facets of social support, whereas the fourth dimension is a purely subjective evaluation.

It is important to note that all of the independent variables were measured at baseline, 6–32 months before assessment of recovery status. Because of the wide variation in the intervals between the two interviews, time to follow-up was included as a control variable in the multivariate analyses, and was examined as a potential correlate of recovery status.

### Methods of analysis

First, contingency table analysis was used to examine the bivariate relationships between the independent variables and outcome (recovered v. non-recovered). Subsequently, multiple regression was used (a) to examine the effects of the independent variables on outcome levels of depressive symptoms, with the effects of other predictors statistically controlled, and (b) to determine the efficacy of the independent variables, as a set, in predicting depressive symptoms at follow-up. In the regression analyses, follow-up CES-D score (in continuous form) was the dependent variable. Hierarchical regression was used to enter the baseline CES-D score (also in continuous form) as the first predictor examined; the other independent variables were entered in a subsequent step. This procedure, known as residualised change analysis, estimates the effects of the independent variables on *changes* in depressive symptoms between test dates. Finally, potential interactions among the independent variables were examined in the regression models.

## Results

Table I presents the bivariate relationships between the independent variables and recovery status at follow-up. Only a few of the independent variables were significantly related to outcome of depressive illness. Among the demographic characteristics, only marital status was significantly related to recovery status. Unexpectedly, the married were less likely to have recovered. None of the measures of psychiatric history were significantly related to recovery. Of the three clinical features of the index episode, as might be expected, patients with baseline CES-D scores of 16 or more, and patients diagnosed as having major depression with melancholia were less likely to have recovered than their respective counterparts. Two of the

TABLE I
*Correlates of recovery status*

| *Independent variable* | *Recovered (n = 73)* n | % | *Not recovered (n = 77)* n | % | *Total (n = 150)* n | % |
|---|---|---|---|---|---|---|
| Sex | | | | | | |
| Male | 34 | 46 | 26 | 33 | 60 | 40 |
| Female | 39 | 54 | 51 | 67 | 90 | 60 |
| Marital status | | | | | | |
| Married* | 51 | 69 | 62 | 80 | 113 | 75 |
| Widowed | 6 | 8 | 8 | 10 | 14 | 9 |
| Divorced/separated | 10 | 13 | 7 | 10 | 17 | 11 |
| Never married | 6 | 10 | 0 | 0 | 6 | 5 |
| Age: years | | | | | | |
| 35–50 | 39 | 54 | 38 | 49 | 77 | 51 |
| 60 and older | 34 | 46 | 39 | 51 | 73 | 49 |
| Family history of suicide | | | | | | |
| No | 38 | 52 | 50 | 64 | 88 | 58 |
| Yes | 35 | 48 | 27 | 36 | 62 | 42 |
| Family history of mental disorder[1] | | | | | | |
| No | 41 | 56 | 36 | 46 | 77 | 51 |
| Yes | 31 | 44 | 38 | 54 | 69 | 49 |
| Baseline CES-D score** | | | | | | |
| <16 | 9 | 13 | 1 | 2 | 10 | 7 |
| ≥16 | 64 | 87 | 76 | 98 | 140 | 93 |
| Duration of depressive episode before admission[1] | | | | | | |
| <13 months | 57 | 78 | 52 | 67 | 109 | 73 |
| ≥13 months | 16 | 22 | 24 | 33 | 40 | 27 |
| Previous episode of depression | | | | | | |
| No | 10 | 13 | 8 | 11 | 18 | 12 |
| Yes | 63 | 87 | 69 | 89 | 132 | 88 |
| Major depression with melancholia** | | | | | | |
| No | 53 | 73 | 41 | 53 | 94 | 62 |
| Yes | 20 | 27 | 36 | 47 | 56 | 38 |
| Dysthymia** | | | | | | |
| No | 39 | 54 | 22 | 29 | 61 | 40 |
| Yes | 34 | 46 | 55 | 71 | 89 | 60 |
| Mild cognitive impairment | | | | | | |
| No | 69 | 94 | 71 | 92 | 140 | 93 |
| Yes | 4 | 6 | 6 | 8 | 10 | 7 |
| Alcohol abuse/dependence | | | | | | |
| No | 60 | 82 | 64 | 83 | 124 | 82 |
| Yes | 13 | 18 | 13 | 17 | 36 | 18 |
| Generalised anxiety disorder** | | | | | | |
| No | 24 | 32 | 11 | 15 | 35 | 24 |
| Yes | 49 | 68 | 66 | 85 | 115 | 76 |
| Unexpected, very important negative life events | | | | | | |
| None | 53 | 68 | 57 | 74 | 110 | 73 |
| One or more | 20 | 32 | 20 | 26 | 40 | 27 |
| Positive life events | | | | | | |
| None or one | 8 | 11 | 7 | 10 | 15 | 10 |
| Two or more | 65 | 89 | 70 | 90 | 135 | 90 |
| Social network[1] | | | | | | |
| Impaired | 42 | 57 | 32 | 43 | 74 | 51 |
| Not impaired | 31 | 43 | 41 | 57 | 72 | 49 |
| Social interaction*[1] | | | | | | |
| Impaired | 11 | 16 | 21 | 29 | 32 | 23 |
| Not impaired | 61 | 84 | 52 | 71 | 113 | 77 |
| Instrumental support[1] | | | | | | |
| Impaired | 8 | 11 | 9 | 13 | 17 | 12 |
| Not impaired | 65 | 89 | 64 | 87 | 129 | 88 |
| Subjective social support***[1] | | | | | | |
| Impaired | 4 | 6 | 19 | 27 | 23 | 16 |
| Not impaired | 69 | 94 | 53 | 73 | 122 | 84 |
| Length of time to follow-up | | | | | | |
| 12–17 months | 53 | 68 | 54 | 70 | 107 | 71 |
| ≥18 months | 20 | 32 | 23 | 30 | 43 | 29 |

1. Total does not equal 150 because of missing data.
*$P \leq 0.05$, **$P \leq 0.01$, ***$P \leq 0.001$ for differences between recovered and not recovered.

TABLE II
*Residualised change analysis of recovery from depression*

| *Independent variable* | *Model 1* | | *Model 2* | |
|---|---|---|---|---|
| | b | B | b | B |
| Baseline CES-D score | 0.32 | 0.26** | 0.32 | 0.25** |
| Sex (female = 1) | 2.44 | 0.07 | 5.40 | 0.16* |
| Age (60 or older = 1) | 0.98 | 0.03 | 2.50 | 0.08 |
| Widowed[1] | −8.43 | −0.14* | −7.29 | −0.12 |
| Divorced/separated[1] | −7.23 | −0.14* | −8.70 | −0.17* |
| Never married[1] | −10.66 | −0.13* | −10.47 | −0.13* |
| Dysthymia | 5.98 | 0.18* | 5.65 | 0.17* |
| Unexpected, very important negative life events | −0.04 | −0.00 | 0.65 | 0.02 |
| Social network (high score = impaired) | −7.86 | −0.24** | −6.46 | −0.20** |
| Subjective social support (high score = impaired) | 8.88 | 0.20* | 21.94 | 0.49*** |
| Age by subjective social support | — | — | −14.04 | −0.16* |
| Sex by subjective social support | — | — | −15.90 | −0.28* |
| Intercept | 6.12 | | 3.09 | |
| $R^2$ | 0.31*** | | 0.37*** | |

1. Marital status was entered as a series of 'dummy' variables; the omitted, reference category is the married.
$^{*}P \le 0.05$, $^{**}P \le 0.01$, $^{***}P \le 0.0001$.

four measures of psychiatric comorbidity were significantly related to outcome status: persons with a diagnosis of dysthymia, as well as those with a diagnosis of generalised anxiety disorder, were less likely to have recovered. Neither measure of life events was significantly related to outcome. Two of the four dimensions of social support, however, were significantly associated with recovery status: as expected, patients who were impaired in social interaction and subjective social support at baseline were less likely to have recovered. Length of time to follow-up was unrelated to recovery.

Table II presents the multivariate results from the residualised change analysis. Before describing the findings, however, the contents of Table II merit brief description. First, two regression models are presented. Model 1 presents the main effects model; model 2 presents the results for the regression equation including significant interaction terms. Second, the configuration of independent variables in Table II merits comment. Regression models including all of the independent variables in Table I were estimated initially. Subsequently, most of the independent variables that did not significantly predict outcome CES-D score were deleted from the models. Both age and sex were retained in the models, however, because the main effects for any variables in the interaction terms must be estimated.

The results for model 1 indicate that higher baseline CES-D scores, being married, a baseline diagnosis of dysthymia, a small social network, and an impaired subjective social support are significant predictors of higher numbers of CES-D symptoms at follow-up, as expected on the basis of the bivariate results. Several predictors that were significantly related to outcome CES-D score in the bivariate analyses (see Table I) were reduced to non-significance in the regression analysis (e.g. major depression with melancholia, generalised anxiety disorder). In addition, one predictor was significant in the regression analysis that was not significant in the bivariate analyses: social network. Unexpectedly, however, impaired social network at baseline was associated with lower numbers of depressive symptoms at follow-up. Overall, the main effects model explains 31% of the variance in follow-up CES-D scores. This explanatory power is highly significant.

Model 2 is nearly identical to model 1 in terms of the main effects of the independent variables. Note, however, that sex does not emerge as a significant predictor of depressive symptoms at follow-up until the significant interaction terms are added to the model. Inclusion of the interaction terms also increases the explained variance of the model to 37%. Before interpreting the significant interaction terms, it should be noted that the stress-buffering hypothesis (Cohen & Wills, 1985; Alloway & Bebbington, 1987) was also tested. This hypothesis posits that life events have more negative effects under conditions of inadequate social support than under conditions of adequate support. We tested the stress-buffering hypothesis for the four dimensions of social support included in the database. In no case was the interaction term statistically significant.

As model 2 indicates, two significant interactions were identified; the effects of subjective social support were conditional on both sex and age. Interpretation of the interaction terms is facilitated by examination of Table III, which provides mean CES-D follow-up scores for study participants cross-classified by age and subjective support, and by sex and subjective support. The mean CES-D outcome score for middle-aged patients with impaired subjective social support at baseline is twice as high as the means for the middle-aged patients with unimpaired subjective social support, and for older patients regardless of baseline levels of subjective social support. Subjective social support is more strongly related to CES-D symptom levels at follow-up for men than for women. Thus, although perceptions of inadequate social support generally predict higher levels of depression at follow-up, they are especially

TABLE III

*Comparisons of mean CES-D scores for age and sex groups by subjective social support*

| *Subgroup* | *Mean CES-D score at follow-up* |
|---|---|
| Middle-aged, impaired subjective social support | 36.11 |
| Middle-aged, unimpaired subjective social support | 16.69 |
| Old, impaired subjective social support | 16.40 |
| Old, unimpaired subjective social support | 17.03 |
| Male, impaired subjective social support | 39.30 |
| Male, unimpaired subjective social support | 13.02 |
| Female, impaired subjective social support | 26.08 |
| Female, unimpaired subjective social support | 19.54 |

potent predictors of outcome for middle-aged patients and for men.

## Discussion

The results of this study support the hypothesis that social support affects the outcome of depressive illness. The subjective social support measure exhibited the strongest and most complex relationships with CES-D outcome scores. In the main effects model, subjective social support was the strongest predictor of CES-D outcome scores with the exception of baseline CES-D score. The interactive model suggested that the effects of subjective social support on CES-D follow-up scores were even more complex.

As noted previously, some investigators, especially Henderson (1984), believe that subjective measures of social support are suspect because they may be confounded with or contaminated by depressed affect (i.e. depressed persons may be more likely to view their social support as dissatisfying or inadequate, regardless of its objective qualities). Given our findings that subjective social support is the most efficacious dimension of social support affecting outcome of depressive illness, this criticism must be confronted. Although our data do not permit us to rule out confounding, we believe that the empirical patterns observed in our data argue against the contamination hypothesis. Three aspects of the research design and findings are relevant to this issue. First, this is a prospective study, and the substantial time interval (6–32 months) between measurements argues against a simple confounding due to affective or mood states at the time of the interview. Second, subjective social support at baseline is a strong predictor of follow-up CES-D scores, *controlling for baseline CES-D scores*. Consequently, any long-term effects of affective states at the time of the baseline measurements should be eliminated or substantially reduced. Finally, the presence of statistically significant and substantively large interactions is hard to reconcile with contamination. That is, if confounding is taking place, it would be necessary to determine why that confounding is especially likely among middle-aged rather than older adults, and among men rather than women.

Although the measure of subjective social support operated in line with theoretical expectations, results based on other dimensions of social support did not. In both the bivariate and multivariate analyses, a smaller social network at baseline was related to fewer depressive symptoms at follow-up, and being married was associated with higher levels of depressive symptoms at follow-up. There is no obvious explanation for these findings. However, they do support the warnings of some investigators (e.g. Pattison *et al*, 1979; Cohen & Wills, 1985; Alloway & Bebbington, 1987) that not all social relationships are supportive and beneficial. Consequently, the quality of interpersonal relationships is an important component of social support assessment, and clearly, in terms of both the statistical significance and theoretical meaning of the findings, subjective support is the most potent dimension.

In an effort to understand why subjective support plays this prominent role, additional analyses were performed, to see which of the nine items in the scale of subjective social support were significantly related to recovery status ($P<0.01$). Eight were: perceptions of being understood by and useful to the members of one's social network; feeling informed about and playing a valued role in the social network; feeling that significant others are available to talk to about problems; feeling that significant others can be counted upon; perceptions of not being lonely; and a positive evaluation of the overall quality of relationships with significant others. The only item in the subjective social support scale that was not significantly related to recovery status was perception of the need for more instrumental assistance from significant others. Overall, these results suggest that subjective social support, although appropriately measured using multiple indicators, is largely a unidimensional phenomenon in terms of its impact on recovery from depression.

Our results also suggest that factors other than social support may affect the course and outcome of depressive illness. In the bivariate analyses, the presence of both melancholia and other psychiatric disorders at baseline were associated with recovery status. Dysthymia was the only of these characteristics to remain statistically significant in the multivariate analyses. It is possible, however, that clinical characteristics contribute to the severity of the major depressive episode, and thus indirectly affect its course and outcome. This pattern of effects might be missed in multivariate analyses (such as those presented in this paper) in which baseline levels of depressive symptoms are statistically controlled.

Life events have been implicated in the onset of depressive symptoms in numerous studies. In this study, however, neither positive nor negative events were significant predictors of outcome. It should be noted, however, that the measures of life events used may not have been the best ones possible for testing the relationship between life events and recovery from depression. Our measures of life events were based on baseline data and inquired about events experienced during the year before admission. In studies suggesting that life events are important for outcome (e.g. Murphy, 1983), measures of life events were based on the interval between baseline and follow-up assessments. Consequently, we are unwilling to conclude that life events are irrelevant to the course and outcome of major depression.

Relative to previous studies, this research had several advantages. First, these results are based on a relatively large clinical sample, in which the diagnosis of major depression at baseline was carefully performed. Second, this was a prospective study, in which the predictors of outcome were ascertained before and independent of follow-up status (a procedure that was advantageous for all of the variables except life events, as just noted). Finally, the database permitted simultaneous examination of six categories of factors potentially affecting course and outcome of illness.

Although this study has a number of strengths, it also has weaknesses. First, all patients enrolled in the study were in-patients at a single treatment facility at baseline. In addition, rather narrow inclusion criteria were used in defining the sample and, consequently, generalisation of our findings is necessarily restricted. Second, although careful diagnostic procedures were implemented during baseline assessments, follow-up status was based solely on a 20-item screening scale. Although the CES-D is a widely used instrument, with documented psychometric properties, it is clearly not comparable with a diagnostic evaluation. Third, results are based on a single follow-up interview that varied in time since baseline assessment, although our results suggest that the length of this interval was not related to follow-up CES-D scores. Nonetheless, use of a single follow-up, as opposed to follow-ups obtained at standardised intervals, precludes a dynamic view of illness course and outcome. We now have instituted follow-up examinations at defined intervals, and hope to examine illness course in more complex ways in future analyses.

From both research and clinical perspectives, better understanding of the course and outcome of depressive illness (and other psychiatric disorders) is needed. Additional effort also is needed to identify the personal, social, and clinical factors that affect the course, duration, and outcome of illness. These results suggest that social support may be one such factor and that it is crucial to distinguish between patients' involvements in interpersonal relationships and the quality of the social support provided by those relationships.

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# The Nature and Prevalence of Depression in Chronic Schizophrenic In-patients

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Out of 194 chronic schizophrenic in-patients, depressed mood (item 23 of the PSE) was present in 25 (13%). When compared with 25 matched controls, the patients with depressed mood had significantly higher scores on the MADRS and the Beck Depression Inventory. Serious suicidal ideas and auditory hallucinations were significantly more common in the depressed group. However, there were no significant differences between the matched groups in terms of negative symptoms, Parkinsonism, tardive dyskinesia, anticholinergic medication, or current dose of antipsychotic drug, which suggests that the depression identified was not related to drug treatment, nor was it a direct manifestation or misinterpretation of negative symptoms. Over three-month follow-up, the MADRS and Beck scores covaried closely with the presence or absence of depressed mood. This depressive syndrome persisted over the three months in the majority of patients originally depressed.

Depressive features in patients with a primary diagnosis of schizophrenia have long been recognised (Mayer-Gross, 1920; Bleuler, 1950). Between 25% and 50% of patients may manifest depressive features during the acute phase of schizophrenia (Shanfield *et al*, 1970; Donlon *et al*, 1976; McGlashan & Carpenter, 1976*a*,*b*; Planansky & Johnson, 1978; Mandel *et al*, 1982). Studies on the prevalence of depression in established schizophrenia (Falloon *et al*, 1978; Knights & Hirsch, 1981; Johnson, 1981; Curson *et al*, 1985) all suggest that relapse can be a major factor in the prevalence of depression. For example, in the one-year follow-up by Falloon *et al* (1978), more patients required in-patient admission for depression than for psychotic relapse. In two of these studies (Knights & Hirsch, 1981; Curson *et al*, 1985) the depressive features conformed to all three syndromes derived from the Present State Examination (PSE; Wing *et al*, 1974): simple depression, special features of depression, and somatic symptoms of depression.

Depressive features identified during relapse tend to decrease in severity with effective antipsychotic drug therapy, in parallel with the psychotic phenomena (Donlon *et al*, 1976; Knights & Hirsch, 1981), and may be 'revealed' as the more florid symptoms subside with treatment (Knights & Hirsch, 1981). These findings suggest that such depression may be part of the core pathology of schizophrenia. This idea is supported by the findings of a study by Johnson (1981), where depression was present in half of a sample of new, acute schizophrenic patients untreated with antipsychotic drugs.

A variety of aetiological theories have been proposed. McGlashan & Carpenter (1976*b*) have used the term 'post-psychotic depression', which implies that the symptoms occur during recovery from a psychotic episode, and constitute patients' response to their recent experience. Other authors have assumed a direct causal role for antipsychotic drugs, especially depot preparations, and have referred to 'pharmacogenic depression' (De Alarcon & Carney, 1969; Ananth & Ghadirian, 1980; Galdi, 1983). Indirectly, drugs may generate Parkinsonian symptoms, such as bradykinesia and loss of spontaneity, that can mimic retarded depression (Rifkin *et al*, 1975; Van Putten & May, 1978). The symptoms of this so-called 'akinetic depression' should respond to anticholinergic drugs. However, depression is a relatively common, but often unrecognised, complication of Parkinson's disease (Mayeux *et al*, 1981; Jeste *et al*, 1984). The association of depression with the motor disturbance of Parkinsonism may represent shared elements of pathophysiology rather than being due to a misinterpretation of psychomotor retardation.

Furthermore, the association between depressive features and certain 'negative' schizophrenic symptoms, such as anhedonia, anergia, feelings of emptiness, and emotional withdrawal (Roth, 1970; Stern *et al*, 1972; McGlashan & Carpenter, 1976*b*) remains unclear. Knights & Hirsch (1981) noted that "it is difficult to distinguish between depressive symptoms and negative symptoms of schizophrenia". Craig *et al* (1985) rated mood and affect in chronic schizophrenia, and identified several dimensions of mood and affect which they felt cut across the traditional assessment instruments, such as the Hamilton Rating Scale for Depression (Hamilton, 1960), a scale which was designed for patients already diagnosed with depression. In their sample of male chronic schizophrenic in-patients, they found an association between Parkinsonian symptoms and depressive features. Similarly, Prosser *et al* (1987) assessed a sample of schizophrenic out-patients, and reported a significant correlation between scores on the negative symptom subscale of the Brief Psychiatric Rating Scale (comprising items for emotional withdrawal, motor retardation, and blunted affect) and both severe Parkinsonism and vegetative features of depression.

The main aim of the present study was to investigate the nature and prevalence of depression in a population of in-patients with established schizophrenia. The strategy was to identify those patients with depressed mood, as a core feature of depression, and to test whether this symptom is commonly an indication of a depressive syndrome in such patients. By examining the nature of those symptoms commonly associated with depressed mood, we hoped to shed some light on the possible overlap between the clinical assessment of negative symptoms, depression, and drug-induced Parkinsonism in chronic schizophrenic in-patients.

## Method

All patients on the 11 non-geriatric long-stay wards of Horton Hospital, Epsom, were screened. Although situated in a semirural area, the catchment area of the hospital has been central London. For the last 20 years it has pursued a vigorous policy of resettlement in the community. The case records of those with a ward diagnosis of schizophrenia were examined, and patients fulfilling DSM–III criteria (American Psychiatric Association, 1980) for schizophrenia were included. Two of the investigators (DAC and MP) rated patients for the presence of item 23, depressed mood, on the PSE, and then completed a full Comprehensive Psychopathological Rating Scale (CPRS; Åsberg *et al*, 1978) using the full scoring range of 1 (absent) to 7 (severe).

Patients with PSE ratings 1 (moderate) or 2 (severe) for depressed mood were matched for age, length of illness, and sex, with patients scoring zero. Within one week of assessment the 'depressed' patients and their matched controls were blindly assessed by the second two investigators (TREB and PFL) using the following instruments: Scale for Assessment of Negative Symptoms (SANS; Andreasen, 1982) modified to include a specific rating for anhedonia; the Beck Depression Inventory (Beck *et al*, 1961); the Extrapyramidal Rating Scale (EPRS; Simpson & Angus, 1970); and rating scales for tardive dyskinesia (Barnes & Trauer, 1982) and akathisia (Barnes & Halstead, 1988). All the investigators practised joint interviews before the study, and joint ratings were performed throughout the study to check inter-rater agreement. Details of each patient's medication were recorded, and antipsychotic drug dose was converted to chlorpromazine equivalents a day (Davis, 1976; Baldessarini, 1978).

The matched pairs of initially 'depressed' patients and their controls were then reassessed three months later by the same pair of raters, using PSE item 23 and the CPRS. The second two investigators repeated the remainder of the assessment battery and were again blind to the PSE and CPRS results.

### Statistics

The data were analysed using the Statistical Package for the Social Sciences (SPSS; Nie *et al*, 1975). Pearson correlation coefficients, two-tailed *t*-tests, non-parametric tests, and multivariate statistics were performed as appropriate.

## Results

Of the 287 patients on the long-stay wards, 239 carried a clinical diagnosis of schizophrenia, and 222 fulfilled DSM–III criteria A, B, C, D and F. Ten patients included in the study failed to fulfil criterion E (onset of prodromal or active phase of illness before the age of 45), usually because of inadequate case record information and/or their first contact with psychiatric services was in middle age, sometimes preceded by years of eccentric or itinerant behaviour. No cases of suspected or definite organic brain disease were included.

PSE item 23 and a full CPRS could be completed for 194 patients. The reasons for the failure of the interview in the remaining 28 were: mutism (13); persistent refusal to co-operate (5); poor command of English (4); inability to comprehend questions, including deafness (3); gross thought disorder (2); and absent without leave from the hospital (1).

### Prevalence of depressed mood (PSE item 23)

Of the 194 patients rated on PSE item 23, 17 patients scored 1 and 8 scored 2, yielding a point prevalence for depressed mood of 12.9%. The 25 patients with depressed mood and their matched controls were compared on several variables (see Table I).

At three-month follow-up, 15 patients were still rated as positive for depressed mood, with nine patients scoring 1 on PSE item 23, and six patients scoring 2. However, five of the matched controls had developed depressed mood, four patients scoring 1 and one scoring 2.

### Rating scale variables

Montgomery & Åsberg (1979) derived a depression rating scale (MADRS) based on ten items of the full CPRS: sadness; inner tension; inability to feel; pessimistic thoughts; lassitude, concentration difficulties; reduced appetite; reduced sleep; suicidal thoughts; and apparent sadness on observation. The total scores for these ten items in the matched groups at initial assessment and three-month follow-up were compared with the PSE ratings of depressed mood.

TABLE I

*Comparison between chronic schizophrenic patients with depressed mood (PSE item 23) and group without depressed mood, matched by sex, age, and length of illness*

| | *Depressed (n = 25)* | *Controls (n = 25)* | *Significance of difference (P value)* |
|---|---|---|---|
| Men | 15 | 15 | |
| Women | 10 | 10 | |
| Men age: years (s.d.) | 60.5 (12.9) | 60.4 (12.6) | 0.982 |
| Mean length of illness: years (s.d.) | 32.2 (10.4) | 31.9 (10.3) | 0.792 |
| PSE item rating 0 | 0 | 25 | |
| PSE item rating 1 | 17 | 0 | |
| PSE item rating 2 | 8 | 0 | |
| Mean MADRS score (s.d.) | 15.9 (8.1) | 3.44 (4.6) | <0.001* |
| Mean Beck score (s.d.) | 19.5 (10.9) | 10.2 (9.2) | 0.004* |
| Mean affective flattening score (s.d.) | 11.4 (7.3) | 9.1 (5.7) | 0.223 |
| Mean alogia score (s.d.) | 3.0 (2.2) | 1.96 (1.5) | 0.054 |
| Mean orofacial dyskinesia score (s.d.) | 2.76 (2.1) | 3.24 (2.4) | 0.463 |
| Mean trunk and limb dyskinesia score (s.d.) | 1.24 (2.2) | 0.96 (2.2) | 0.658 |
| Mean akathisia score (s.d.) | 0.6 (0.9) | 0.44 (0.7) | 0.479 |
| Mean Parkinsonism score (s.d.) | 0.8 (0.9) | 0.68 (0.9) | 0.650 |
| Positive symptom score (s.d.) | 17.6 (5.4) | 14.5 (5.8) | 0.058 |
| Auditory hallucination score | 0.56±0.5 | 0.20±0.4 | 0.008* |
| Mean daily antipsychotic drug dose[1] (s.d.) | 655 (119) | 991 (355) | 0.374 |

1. Calculated as chlorpromazine equivalents, mg a day.
*Significant difference.

The Beck depression score was also compared with the PSE depressed mood scores and the MADRS scores. Beck data were missing for six patients (three depressed, three controls) at initial assessment and, at three-month follow-up, for five of the same initial six patients (three depressed, two controls) because of inability or refusal to complete the rating scale.

An orofacial dyskinesia score was derived from the first four items of the tardive dyskinesia rating scale, which rates movement at four sites: periorbital; lips; tongue; and jaw. Akathisia scores were based on the global clinical assessment item of the rating scale. Similarly, the global assessment item of the EPRS was taken as the Parkinsonian symptom score.

Two subscores for negative symptoms were derived from the SANS. Affective flattening (AF) was the total of six items: unchanging facial expression; decreased spontaneous movements; poverty of expressive gestures; poor eye contact; affective non-responsivity; and lack of vocal inflection. Alogia was derived from the total scores of four items in this section of the SANS: poverty of speech; poverty of content of speech; blocking; and increased latency of response.

A CPRS score for positive symptoms was derived as a total for the following items: feeling controlled; disrupted thoughts; ideas of persecution; ideas of grandeur; other delusions; commenting voices; other auditory hallucinations; visual hallucinations; and other hallucinations.

## Inter-rater agreement

Throughout the course of the study, 29 joint CPRS interviews were performed by the first pair of raters (DAC and MP), each conducting approximately half the interviews, while the other scored on the basis of replies to questions. Neither rater could see the other's scoring sheet. So as not to disrupt the interview, the scores could be altered at the end, after checking with the glossary of definitions for levels of severity.

Based on these data, the inter-rater reliability for the CPRS items, expressed in terms of Cohen's $\kappa$, ranged from 0.71 to 1.0, and there was no bias between the raters. The correlations for items referring to reported symptoms were generally slightly higher than those recorded for observed psychopathology, a finding consistent with previous studies of the inter-rater reliability of this scale (Jacobsson *et al*, 1978; Kasa & Hitomi, 1985).

For the SANS, 17 joint interviews were conducted throughout the study by the two raters (TREB and PFL). Scores for both the AF and alogia subscales were compared. Correlation coefficients were 0.67 ($P = 0.004$) and 0.57 ($P = 0.02$) respectively. There was no systematic bias between the two raters: the mean scores for AF were 10.18 (s.d. 4.61) and 9.18 (s.d. 5.02) (paired $t = 1.10$, $P = 0.29$). Similar results were obtained for the ratings of alogia. It should be noted that a higher level of inter-rater agreement could be expected for the CPRS, since patients were asked to describe each symptom in detail, and there are clearly defined anchor points for each item.

## Correlation between PSE depressed mood and other variables

Comparison of the PSE 'depressed' group with the control group at initial assessment revealed a higher mean MADRS score in the former: 15.9 versus 3.44, with the median scores being 17 and 1, with ranges of 3–35 and 0–12 respectively. This difference was highly significant using a two-tailed $t$-test ($P<0.001$) (see Table I). The Beck depression scores also showed a highly significant difference between the PSE depressed and control groups at initial assessment, the mean scores being 19.5 and 10.2 respectively ($P=0.004$). The former score lies within the range for moderate depression, while the latter score falls within the mild depression range (Beck & Beamesderfer, 1974).

The association between the higher mean MADRS score and PSE depressed mood persisted at three-month follow-up. The mean MADRS score increased from 1.4 to 15.6 in the five control patients who had developed PSE depressed mood during follow-up, and declined from 13.9 to 4.9 in the ten patients who no longer had PSE depressed mood at follow-up. Within the same two subgroups, the mean Beck depression scores showed similar changes, increasing from 17.8 to 25.5, and declining from 16 to 9.3 respectively. The mean score of 17.8 in the five 'non-depressed' control patients who developed depressed mood and elevated MADRS scores raises the possibility that a relatively high Beck score might be either an early feature of depression in chronic schizophrenic patients or a trait marker of those patients prone to depression.

There was a significant difference between the two groups in the presence of auditory hallucinations, a variable which combined the CPRS items 'commenting voices' and 'other auditory hallucinations'. More depressed patients had definite auditory hallucinations, that is, rated as 5 or more on either of the two items, and when present they were consistently rated as more severe (see Table I). Also, suicidal thoughts, as rated on the CPRS, were more common in the depressed group. Four patients in the initial depressed group experienced pathological suicidal ideas, that is, warranting a rating of 5 or more, compared with none of the control group ($\chi^2=4.35$, $P>0.05$). Two of the depressed group and three of the controls expressed suicidal thoughts rated as mild, that is, scoring less than 5 on this item.

At initial assessment, there were no significant differences between those patients with depressed mood and the matched controls on any of the other variables defined above (see Table I). Indeed, the mean daily dose of antipsychotics was higher in the control group (991 mg) than in the 'depressed' group (655 mg). The distribution of oral and depot preparations was similar in the two groups. Sixteen patients in each group were receiving depot antipsychotic drugs. Fluphenazine decanoate was the commonest, being administered to eight patients in the non-depressed group and nine in the depressed group. The patients in the two groups were also taking a variety of oral antipsychotic drugs, and nine of the non-depressed group and seven of the depressed group were receiving a combination of oral and depot medication. It was, therefore, not possible to determine the possible contribution of any particular drug to the depressive picture.

Over the follow-up period, only ten patients in the two groups had changes made to their antipsychotic medication: six in the depressed group, the dosage being reduced in four, and four of the control group. Only two patients, both in the depressed group, were receiving antidepressant medication, and this had been discontinued during the three-month follow-up in one of them. One patient had recovered from severe depression at follow-up, having restarted lithium carbonate, which he had taken for many years until six months before the initial assessment.

There was a trend for a higher mean score in the depressed group compared with the non-depressed group on two variables: the alogia subscore ($P=0.054$) and the positive symptom score derived from the CPRS ($P=0.058$) (see Table I). The latter trend mainly reflected the significant difference between the two groups in the presence of auditory hallucinations.

A Pearson correlation coefficient supported a strong association between PSE depressed mood and MADRS scores at both initial and follow-up assessments ($r=0.7$, $P<0.001$; $r=0.74$, $P<0.001$). There was no association between either orofacial or trunkal dyskinesia and any other variable, including antipsychotic medication dosage, except for a significant, positive relationship between orofacial dyskinesia and age, which was only found in the original depressed group. The relationship was present both initially ($r=0.57$, $P=0.003$) and at follow-up ($r=0.61$, $P=0.001$). There were no significant correlations between dosage of antipsychotic medication, akathisia, tardive dyskinesia, Parkinsonism and the positive and negative symptom subscores. There were no significant correlations between MADRS scores and demographic variables such as length of illness and age of onset of the illness.

## Discussion

For most patients studied, the presence of depressed mood indicated a depressive syndrome which was rateable on recognised rating scales for affective disorders. This depression was a distressing subjective experience and persisted beyond three months in three-fifths of those patients originally identified, and emerged in a fifth of the control group over the same period. Over this follow-up period, both the MADRS and Beck scores increased or decreased in parallel with the presence or absence of the PSE depressive symptom, lending support to the idea that the depressive features rated in these patients constituted a valid syndrome of clinical relevance.

Those patients with depressive features were significantly more likely to have serious suicidal thoughts. This finding is consistent with the results of recent studies which suggest that the suicidal risk is higher in schizophrenic patients with depressive symptoms (Roy, 1986; Prasad, 1986). Between 10% and 25% of schizophrenic patients will commit suicide, and the suicidal behaviour has been considered impulsive and unpredictable (Warnes, 1968; Haugland *et al*, 1983). However, there seems to be accumulating evidence that the presence of depressive features can be one clinical indication of an increased likelihood of suicide in a schizophrenic patient.

Perhaps of equal importance with the significant associations found in this study was the failure to demonstrate such associations between mood disturbance and a number of variables previously suggested as contributory causal factors. There was no relationship apparent between depressed mood and dosage of antipsychotic medication. In this respect, our results fail to provide support for the concept of 'pharmacogenic depression'. Further, no associations were found between depressed mood and Parkinsonism, and the matched groups were equally likely to be receiving anticholinergic medication. These results are incompatible with the notion of drug-related akinesis as a major contributor to depressive features in this patient sample. Rather, the finding of a significantly higher score for auditory hallucinations and a trend for a higher mean positive symptom score in the group with depressed mood is consistent with the results of studies of acute schizophrenic relapse that suggest that depression may be part of the core psychopathology of schizophrenia (Donlon *et al*, 1976; Knights & Hirsch, 1981; Johnson, 1981; Curson *et al*, 1985).

No significant relationship was found between PSE depressed mood, MADRS scores, or the Beck depression score and negative symptoms, even when negative symptoms were separated into features of affective flattening and alogia. Thus, affective flattening emerged as a discrete symptom that was not being confused with depression, nor was it a manifestation of Parkinsonism. The trend for an association between alogia and depression may reflect a degree of psychomotor retardation in the depressed group, as found in primary depressive syndromes. These findings are in accord with those of Prosser *et al* (1987), who found no association between negative symptoms and 'cognitive' features of depression.

The finding that schizophrenic patients with depression experienced auditory hallucinations more commonly than their non-depressed fellows does not allow for the easy interpretation that persistent schizophrenic voices will lead to dysphoria. Only one patient in the depressed group specifically attributed his depresion to being due to voices 'getting me down'. Descriptions of the content of the hallucinations in the depressed patients suggested that the voices were not predominantly commenting voices, typical of schizophrenia, nor were they purely mood-congruent, as can occur in the affective psychoses. Nevertheless, a tentative hypothesis is that schizophrenic patients who become depressed are likely to develop auditory hallucinations, which may be more characteristic of psychotic depression than of schizophrenia.

## Conclusion

Depressed mood was present in approximately one in eight patients within our sample of long-stay, chronic schizophrenic in-patients. It conformed to a typical depressive syndrome, and was distinct from affective flattening; however, some overlap was found between depression and SANS items such as poverty of speech and increased latency of response, symptoms which are recognised as negative symptoms of schizophrenia, but also as characteristic features of depressive illness. The aetiological hypotheses of 'pharmacogenic' or 'akinetic' depression were not supported. Whether this apparently typical depressive syndrome in chronic patients is an integral part of schizophrenia, or whether it reflects episodes of depression related to their adverse circumstances and multiple handicaps, remains a matter of speculation.

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# The Scottish First Episode Schizophrenia Study

## VI. Computerised Tomography Brain Scans in Patients and Controls

THE SCOTTISH SCHIZOPHRENIA RESEARCH GROUP, H. L. MACDONALD and J. J. K. BEST

This is the initial report of a prospective study by computerised tomography brain scan of first episode schizophrenia. Twenty-seven patients who met Research Diagnostic Criteria for schizophrenia were compared with volunteer controls on ventricular: brain ratio, sulcal: brain volume ratio, and the widths of third ventricle and Sylvian and interhemispheric fissures. The results provide evidence that sulcal enlargement, but not ventricular abnormalities, may be detected at first admission for schizophrenic illness, and are discussed in relation to findings from other studies.

Evidence from over 60 controlled studies suggests that some schizophrenic patients show on computerised tomography (CT) brain scans mild and non-specific brain morphological abnormalities (Reveley, 1985*a*; Shelton & Weinberger, 1986). Lateral ventricular enlargement, and, to a lesser extent, sulcal widening, have been the most frequently described changes, although reports have also included widening of the third ventricle, atrophy of the cerebellar vermis, decreased frontal brain tissue density, and reversed cerebral asymmetries. Not all studies show positive results, but the validity of the finding of scan abnormalities in some schizophrenic patients is supported by the association of the abnormalities with clinical features, such as negative symptoms, cognitive impairment, and poor response to treatment, as well as other clinical, biochemical, and neurophysiological variables (Reveley, 1985*a*; Shelton & Weinberger, 1986).

Because scan abnormalities have been demonstrated most often in chronic, hospitalised patients, it has been suggested that they are epiphemonema, associated with drug and other physical treatment of the illness (Marsden, 1976), or with alleged adverse effects of hospitalisation, such as poor nutrition, infection or head injury (Jellinek, 1976). The weight of evidence, however, is against a causative role for physical treatment (Owens *et al*, 1985) and also, with exceptions (Tanaka *et al*, 1981; Moriguchi, 1981), against an association between scan abnormalities and duration of illness or of hospitalisation (Reveley, 1985*a*; Shelton & Weinberger, 1986). If the scan changes are more directly associated with the illness, are they present when the illness first manifests (possibly representing predisposing causes of genetic or environmental origin) and, if so, do they remain static or do they progress with the illness?

A few studies have now looked at CT scans early in the course of schizophrenia. Three (Weinberger *et al*, 1982; Nybäck *et al*, 1982; Owens *et al*, 1985) examined patients in their first episode of illness, and three others (Benes *et al*, 1982; Schulz *et al*, 1983; Turner *et al*, 1986) studied patients within a few years of illness onset. The results are inconclusive, interpretation in all except Turner's study being clouded by a number of methodological problems, including: in four studies, choice of other (mainly neurological) patient controls rather than volunteers (see under 'Discussion'); in two studies, retrospective design, with possible selection bias; and in one study, lack of standard diagnostic criteria for the first episode patient group. Small numbers were also a problem, half of the studies having 15 or fewer patients.

The Scottish First Episode Schizophrenia Study provided an opportunity to further this work, by studying a sizeable number of patients in their first episode of illness, with repeat measurements one, two and five years later, and using healthy volunteers as controls. As well as investigating abnormalities on CT, the study seeks to determine their relationship to negative symptoms, cognitive functioning, treatment response, and various diagnostic criteria.

## Method

The selection and characteristics of the total patient sample in the Scottish First Episode Schizophrenia Study are described elsewhere (Scottish Schizophrenia Research Group, 1987). It is a comprehensive multicentre prospective study of 49 patients admitted with a clinical diagnosis of schizophrenia, in their first episode.

### Patients and controls

All patients entered into the above study were invited to have a CT scan as soon as their clinical condition permitted following admission to hospital. Control subjects were recruited at the same time as the patient study by requesting volunteers from the staff of two psychiatric hospitals. The controls were matched by sex and by age (± 5 years) with the patients. Informed consent was obtained in all subjects scanned, and the research was passed by the relevant hospital ethics of research committees.

Both patients and volunteers were rejected from the CT scan study if they gave a history of the following: head trauma with coma, encephalitis, meningitis, epilepsy, multiple sclerosis, cerebral palsy, persistent drug or alcohol abuse. Volunteer controls were also excluded if they had a history of psychiatric admission or had had one or more head X-rays in the previous 12 months.

### CT scan methodology

All scans were done at the CT Scanning Unit at Edinburgh Royal Infirmary. The majority (24 patients and 23 controls) were done on an EMI 5005 scanner; the rest (10 patients and 11 controls) were done on a GE 8800 scanner. The use of two machines was not intended in the study design – it became necessary for technical reasons. With both machines, the plane was parallel to Reid's baseline. The EMI 5005 scanner was used to obtain eight to ten scans per subject at 1 cm intervals, with the level for hard copies set at +20 and the window width at 30. The GE 8800 scanner was used to obtain 11 to 14 sections per subject at 5 mm intervals through the posterior fossa, then at 1 cm intervals to the top of the cranium, with the level set at +40 and the window width at 60. Measurements were made blind by one experienced radiologist on patient and control scans at the same time. The measurements used were as follows.

(a) *Lateral ventricles.* On the slice showing the largest area of lateral ventricles for each subject, the lateral ventricles and the inner table of the skull were traced round with a tracker ball and their areas measured using an irregular-area-of-interest program on the viewing console of the scanner. A ventricular : brain ratio was calculated by dividing lateral ventricular area by intracranial area and multiplying by 100.

(b) *Third ventricle.* The greatest width of the third ventricle in the slice showing the maximum width was obtained using computer software as in (a), above.

(c) *Cortical fissures.* The maximum widths of the interhemispheric and Sylvian fissures were obtained as above.

(d) *Cortical sulci.* An estimate of the sulcal : brain volume ratio was obtained using Reid's stereological method (Reid, 1983). This involves using a dot template over the hard copies of the scans. A dot density of 56 per cm$^2$ was used, and each of the top three slices for each scan was read five times, and an average of the five readings taken. (Reid provides a formula which allows calculation, for a given template, of the number of repeat measurements required for a desired level of accuracy, here chosen as 5%.) All the other measures in (a–c) above were also repeated five times, and an average value taken, in order to enhance accuracy.

### Other measures

*Negative symptoms.* Two items from the Krawiecka scale (Krawiecka *et al*, 1977), flat affect and poverty of speech, were used. Scores of 1 (non-pathological) on either item were ignored. Scores were then either zero (negative symptoms absent) or 2–8 (negative symptoms present). The scores used were baseline ones, before the commencement of the drug study (see 'Treatment response', below).

*Intellectual functioning.* IQ scores were obtained on Raven's Progressive Matrices (Raven, 1938) and the Mill Hill Vocabulary Scale (Raven, 1948).

*Treatment response.* The whole study (Scottish Schizophrenia Research Group, 1987) included a drug trial of oral pimozide versus oral flupenthixol (there was no difference in efficacy). Response to acute treatment was measured by examining scores on the Krawiecka scale at baseline and after the treatment period (six weeks apart), and the changes in scores for those who had recordings at both points.

*Diagnostic criteria.* The main diagnostic instrument selected for this CT scan study was the Research Diagnostic Criteria (RDC; Spitzer *et al*, 1978). However, for other purposes ratings were available on the subjects on the Present State Examination (PSE; Wing *et al*, 1974) using the Catego classification, and on Feighner's diagnostic criteria (Feighner *et al*, 1972).

### Statistics

Although patients and controls were matched by age and sex with the intention that statistical methods appropriate to matched pairs might be used, it was demonstrated (see below) that the CT scan measures were unrelated to sex and only partially related to age. The samples could not therefore be regarded as matched, and techniques for independent samples were used. Differences between means were tested by a two-tailed $t$-test. Where conditions for a $t$-test were not met (skewness of distribution or inequality of variances), data were reanalysed after $\log_{10}$ and square-root transformations and with the Mann-Whitney $U$ test. Correlations were calculated using Pearson's $r$. The $\chi^2$ test for independent samples, with a continuity correction, was used for nominal data, or Fisher's exact test when small numbers required it. The 5% level was regarded as the limit of significance. An analysis of covariance was carried out as described below using SPSSX (SPSS Inc., 1983).

## Results

Of the 49 patients who entered the whole study with a clinical diagnosis of schizophrenia, 36 had a CT scan. Scanned and non-scanned patients were compared on age, sex, negative symptoms, and intellectual functioning, and no significant differences between the groups were found. Two male patients with a history of head trauma with coma were excluded from further analysis, leaving 34 patients (13 male and 21 female), with 34 age- and sex-matched control subjects. Twenty-eight patients had an RDC rating positive for schizophrenia (24 definite and 4 probable).

The main analysis focused on those patients who were RDC positive for schizophrenia and aged under 55 ($n = 27$) and their controls. The age criterion, which resulted in the exclusion of one scanned patient and one control, was adopted because brain changes and pathologies associated with an age of over 55 introduce greater variability in measurement that can only be controlled for in much larger samples.

For two patients and four controls among all those scanned, data stored on tape could not be retrieved for technical reasons. Measurements using computer software were therefore impossible in these subjects, but the sulcal : brain volume ratios measured on hard copies were available. Because it also proved impossible on a few scans to obtain satisfactory measures of fissures and/or sulci, the numbers of patients and controls for different scan measures vary slightly. Initial IQ measures were unavailable for one patient.

### Scan measures in relation to age and sex, and intercorrelations

Patients had a mean age of 27.4 years (s.d. 9.7, range 17–54) and controls 28.0 years (s.d. 9.3, range 19–54) ($n = 27$ in each case). None of the five scan measures showed a significant correlation with age in the patients. In the controls, both the width of the third ventricle ($r = 0.45$, $P < 0.05$, $n = 26$) and of the Sylvian fissure ($r = 0.55$, $P < 0.01$, $n = 23$) showed a significant correlation with age, while the other three measures did not. No scan measure in either patients or controls showed a significant difference between the sexes.

Table I shows the intercorrelations among the scan measures in patients and controls. In both groups the two ventricular measures are significantly correlated. In the controls, the width of the third ventricle is also significantly correlated with that of the Sylvian fissure, but this is not seen in the patients. The correlation between sulcal : brain volume ratio and the width of the interhemispheric fissure reaches significance at 5% in the patients but not in the controls. The relative lack of intercorrelations supports the value of using the five separate measures.

### Scan measures: patients versus controls

A comparison was made between patients and controls of mean values on all five CT scan measures. On the sulcal : brain volume ratio only, patients had a significantly greater measure than the controls (patients, 7.3 ± 3.3, $n = 23$; controls, 5.0 ± 2.4, $n = 22$: $t = 2.65$, $P < 0.02$). This is shown diagrammatically in Fig. 1. A similar result was observed when all the scanned patients and controls were considered, irrespective of age and RDC classification (patients, sulci = 7.9 ± 3.6, $n = 30$; controls, sulci = 5.2 ± 2.6, $n = 27$: $t = 3.20$, $P < 0.01$). This finding required further scrutiny, however.

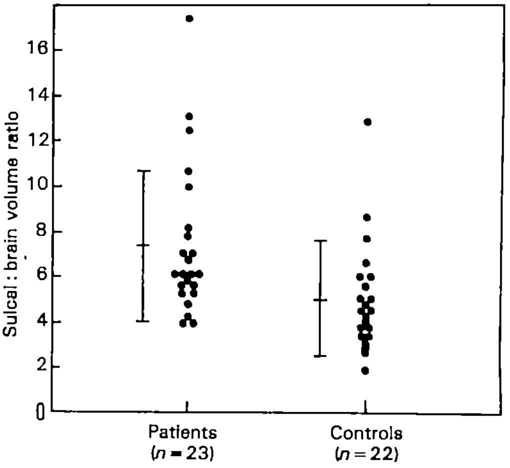

FIG. 1. Distribution of sulcal : brain volume ratio scores in patients and controls. Means are indicated with one s.d. above and below.

### *Scanner differences*

Since two scanning machines had to be used, the possibility had to be considered that different results might be obtained on the different machines, and that this might have biased the comparison between patients and controls. Table II shows that, in the controls, ventricular measurements are significantly greater on the EMI 5005 and the sulcal : brain

TABLE I

*Intercorrelations of scan measures in patients and controls*

| | *Patients* | | | | | *Controls* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (1) | (2) | (3) | (4) | (5) |
| Ventricular : brain ratio (1) | 1.00 | 0.41* | 0.11 | 0.20 | 0.17 | 1.00 | 0.77*** | −0.18 | 0.23 | −0.24 |
| Third ventricular width (2) | | 1.00 | 0.19 | 0.17 | −0.01 | | 1.00 | −0.27 | 0.55** | −0.24 |
| Interhemispheric fissure width (3) | | | 1.00 | 0.17 | 0.44* | | | 1.00 | −0.11 | 0.33 |
| Sylvian fissure width (4) | | | | 1.00 | 0.14 | | | | 1.00 | 0.14 |
| Sulcal : brain volume ratio (5) | | | | | 1.00 | | | | | 1.00 |

***$P < 0.001$, **$P < 0.01$, *$P < 0.05$. The number of cases varies between 20 and 25 in patients and 18 and 26 in controls, depending on availability of data on each measurement.

TABLE II

*Comparison in patients and controls of CT scan measures by scanner used*

| | Patients | | | | | | | Controls | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EMI 5005 | | | GE 8800 | | | | EMI 5005 | | | GE 8800 | | | |
| | *Mean* | *s.d.* | n | *Mean* | *s.d.* | n | t-*test* | *Mean* | *s.d.* | n | *Mean* | *s.d.* | n | t-*test* |
| Ventricular : brain ratio | 9.5 | 3.3 | 17 | 8.7 | 3.4 | 8 | NS | 10.6 | 3.2 | 20 | 6.1 | 1.5 | 6 | 3.22 $P<0.01$ |
| Third ventricular width: mm | 4.0 | 1.1 | 17 | 3.4 | 1.6 | 8 | NS | 3.8 | 1.1 | 20 | 2.2 | 0.4 | 6 | 3.40 $P<0.01$ |
| Interhemispheric fissure width: mm | 3.5 | 2.4 | 15 | 3.9 | 2.4 | 8 | NS | 3.3 | 1.4 | 16 | 4.6 | 2.1 | 5 | NS |
| Sylvian fissure width: mm | 4.1 | 1.7 | 16 | 4.4 | 1.4 | 8 | NS | 4.1 | 2.0 | 17 | 3.0 | 1.4 | 6 | NS |
| Sulcal : brain volume ratio | 7.0 | 3.3 | 15 | 8.0 | 3.4 | 8 | NS | 4.5 | 1.8 | 18 | 7.4 | 3.7 | 4 | 2.21 $P<0.05$ |

volume ratio is significantly greater on the GE 8800. The same trend is observed in patients, below statistical significance. Fortunately similar proportions of both patients and controls were scanned on the two machines. When the sulcal measurement is compared between patients and controls on each machine separately, the significant difference is maintained on the EMI 5005 (patients, sulci $=7.0\pm3.4$, $n=15$; controls, sulci $=4.5\pm1.8$, $n=18$: $t=2.65$, $P<0.05$), although not on the GE 8800, where the numbers were small (patients, sulci $=8.0\pm3.4$, $n=8$; controls, sulci $=7.4\pm3.7$, $n=4$: $t=0.26$, NS). (None of the above results was altered by prior $\log_{10}$ or square-root transformation of the data or by substitution of the Mann-Whitney $U$ test for the $t$-test.)

### *Controlling for age and scanner*

Because of the complication of the demonstrated differences in measurements between the two scanners and the additional possible confounding effect of age, it was felt advisable to check further the validity of the comparison of scan measures between patients and controls by performing an analysis of covariance. This first extracted the variation associated with age (as covariate), then identified the separate main effects of scanner used and of patient/control status, and finally tested for interaction between scanner and patient/control status. The results (significance levels of $F$ values) are shown in Table III.

TABLE III

*Significance levels of* F *values in analysis of covariance–scan measures by scanner and by patient/control status, controlling for age*

| | *Covariate (Age)* | *Main effects* *Scanner* | *Status* | *Interaction (scanner × status)* |
|---|---|---|---|---|
| Ventricular : brain ratio | $<0.05$ | $<0.05$ | NS | NS |
| Third ventricular width: mm | NS | $<0.02$ | NS | NS |
| Interhemispheric fissure width: mm | NS | NS | NS | NS |
| Sylvian fissure width: mm | $<0.02$ | NS | NS | NS |
| Sulcal : brain volume ratio | NS | $<0.02$ | $<0.02$ | NS |

There are, as expected, some significant differences on some measurements in relation to age and scanner used, but when these variables are controlled, there is still a significant difference between patients and controls on sulcal : brain volume ratio, and on no other measure. Adjustment for age and scanner used in fact made minimal difference to mean sulcal values in patients and controls (unadjusted means in patients and controls 7.3 and 5.0, adjusted means 7.2 and 5.1). There were no significant interactions between scanner used and patient/control status. The analysis was repeated twice using $\log_{10}$ and square-root transformations, and the only change in result was that the association between third ventricle width and age became significant at the 5% level.

## **Sulcal enlargement: association with other variables**

Since only sulcal : brain volume ratio distinguished patients and controls at a statistically significant level, it was of interest to examine those with the largest scores on this measure more closely, to see whether they were different from the rest in relation to clinical and other variables. In the whole sample of 34 patients in the CT scan study, seven patients had sulcal measures which were more than 2 s.d. above the mean for the controls. These were designated as having 'large sulci', and the other patients ($n=23$) as having 'normal sulci'. In four patients, sulcal measures were unobtainable because of poor scan quality. There were no statistically significant differences between these groups on age, negative symptoms, performance and verbal IQ, and treatment response. Those with 'large sulci' had a slightly greater mean age (36 v. 27) and fewer of them had negative symptoms (1 out of 7 v. 11 out of 23), but the number in this group is too small to permit much interpretation.

## **Scan measures in relation to negative symptoms and intellectual functioning**

For those patients under 55 with an RDC diagnosis of schizophrenia, no scan measurement showed any significant relationship with negative symptoms or with intellectual functioning.

## **Other diagnostic criteria**

The study also gave an opportunity to see how the application of different diagnostic criteria for schizophrenia might affect the main results obtained. Twenty-two of the 34 patients in the CT scan study were PSE Catego class S+ (core schizophrenia) and 7 of the 34 were Feighner positive (definite and probable) for schizophrenia. Patients in these two categories were compared with their controls on the five CT scan measures.

The significantly greater sulcal measure in patients versus controls already found in the patients RDC positive for schizophrenia was also present in PSE and Feighner groupings (PSE S+: patients, sulci = 8.5 ± 4.1, $n = 19$; controls, sulci = 5.1 ± 2.6, $n = 16$; $t = 2.77$, $P < 0.01$. Feighner rating positive: patients, sulci = 7.4 ± 2.6, $n = 6$; controls, sulci = 4.8 ± 1.1, $n = 7$: $t = 2.22$, $P < 0.05$). No other significant difference emerged in the PSE grouping, but in the Feighner grouping the width of the interhemispheric fissure (IHF) was significantly less than in the controls (patients, IHF = 1.4 ± 1.6, $n = 7$; controls, IHF = 3.7 ± 1.6, $n = 7$; $t = 2.45$, $P < 0.05$).

## Discussion

Although this study combines the advantages of using first episode, as opposed to early, schizophrenia, standardised diagnostic criteria, prospective design, volunteer controls, and relatively (for such research) large numbers, the results must be interpreted with some qualifications in mind.

First episode schizophrenia is not a frequent presentation to the individual clinician or unit, and the researcher has to choose between a long wait, accepting referrals to a central point, with possible selection bias; or a multicentre design. The last was chosen here, with advantage in recruitment, but difficulty in controlling all the necessary conditions (e.g. the introduction of a second scanner). Even then, the total number of subjects obtained, while permitting comparison between patient and control groups, put restraints on more detailed analysis. Also, the study design did not include collection of detailed information on two variables which are now realised to have a potential effect upon CT scan results obtained in different samples – alcohol intake (Ron *et al*, 1982; Gurling *et al*, 1984) and perinatal trauma (Reveley, 1985*a*).

The main findings of the study are a significant difference in sulcal:brain volume ratio between patients and controls (implying a degree of cortical atrophy in patients) and failure to find significant differences in ventricular:brain ratio (VBR), width of the third ventricle, the interhemispheric fissure, or the Sylvian fissure. The widths of the interhemispheric and Sylvian fissures have received little comment previously, but are of particular interest because of an observation (Oxenstierna *et al*, 1984) from isotope cisternography that a third of a group of chronic schizophrenic patients showed evidence of reduced flow of cerebrospinal fluid (CSF) over the hemispheres. Ventricular enlargement, together with interhemispheric and Sylvian fissures which are wide in relation to cortical sulci, may indicate a low-pressure hydrocephalus type of CSF circulation disturbance (Greitz & Hindmarsh, 1974). No evidence to support such a concept was found here.

How valid are the findings and how far can they be compared with those of other studies? Bias may arise in the choice of patients, the choice of controls, and in techniques of measurement (Luchins, 1982; Reveley, 1985*b*). Once patients had entered the whole study, there is no indication that any important selection factor was operating in choosing those who were scanned.

Choice of control group is very important. Smith & Iacono (1986) have produced evidence which suggests that discrepancies in published studies on VBR owe more to differences in control groups than in patient populations. The ideal would be random selection from the general population. Since this is not practicable, the next best thing, as done here, is to recruit healthy volunteers. This is preferable to using scans from some other patient group. The presence of other pathology in medical patients (for example) could bias either for or against finding a difference between schizophrenic patients and controls. Scans following minor head injury, with cerebral oedema, might show small ventricles, while a variety of neurological illnesses, nutritional deficiencies and drugs are associated with ventricular enlargement. Smith & Iacono (1986) showed that in the controlled studies of VBR which they examined, medical patient controls had a smaller mean VBR than volunteer controls. Another possible reason for this is the retrospective selection of 'normal' scans in medical patients, where scans with normal but larger ventricles are systematically excluded.

It is well accepted that results of CT scan measurements cannot simply be compared across studies (Jernigan *et al*, 1982), because of differences associated with different machines, different settings, and, with planimetry, different interpretation of where the edge of the ventricle or other structure is because of the partial-volume effect where brain and CSF are superimposed; hence the importance of studies having their own controls with scans on all subjects being done on the same machine and all read at the same time by the same person (Zatz & Jernigan, 1983). These conditions were met here apart from the unfortunate necessity of using two machines. Although the two machines tended to give different results, the analysis of covariance was able to demonstrate that this did not confound the comparison between patients and controls.

There are different ways of measuring the various CT scan parameters, and Reveley (1985*b*) has compared ventricular measurements. Although there are advantages in using computerised techniques that use specified scan density parameters, he showed that planimetry on video display units, the method used here, shows a very high correlation with computer-derived total ventricular volume. In the method of estimating sulcal:brain volume ratio used here, Reid's instructions were followed so as to give accuracy within ±5% (Reid, 1983).

The negative finding in relation to VBR in this study is at odds with the positive findings in three other studies of early schizophrenia (Weinberger *et al*, 1982; Schulz *et al*, 1983; Turner *et al*, 1986). The value obtained for VBR in this study is higher than those obtained in the others, especially in the controls. Weinberger and Schulz's use of neurological patient controls may help to explain the difference, but Turner *et al* used volunteer controls. The patients in Turner's study were within two years of onset of illness rather than first episode, leaving open the possibility that VBR changes develop only after the illness has become manifest.

On the other hand, the positive finding in relation to sulcal prominence matches the finding of Turner *et al* (1984, unpubl.). In the only other reference to sulci in studies in early schizophrenia, Weinberger *et al* (1982) failed to find a significant difference with what may have been an unsatisfactory method of measurement (visual rating). It should be noted that in studies of chronic patients that appear to show both ventricular and cortical abnormalities, for example Weinberger's original study (Weinberger *et al*, 1979), the two types of abnormality may not correlate, and may represent different underlying causes.

It should also be taken into account that most of the findings of CT abnormalities have been in chronic patients and associated with factors such as negative symptoms and cognitive impairment, which might promote retention in hospital. Even if the abnormalities were present at first episode, they would be diluted in a sample of first episode patients by the presence of other patients with better prognosis, and would therefore require larger samples for their detection than would be required for more chronic patients. Put another way, there might well be a greater chance of type II error in a first episode sample than in a chronic sample of the same size.

Although in the literature on chronic schizophrenia, VBR has been associated with cognitive impairment, negative symptoms, and poor response to acute treatment, there is less information on the clinical associations of sulcal enlargement. Both Rieder *et al* (1979) and Nasrallah *et al* (1983) did find an association between sulcal enlargement and cognitive impairment, which was not demonstrated in this study in the small number of patients with 'large sulci'. However, Nasrallah *et al* (1983), like the present authors, failed to demonstrate any association with negative symptoms or poor treatment response.

The consistency of results over the different diagnostic criteria was not too surprising in view of the overlap of patients; for example, all the patients diagnosed schizophrenic on the Feighner criteria were also diagnosed on RDC criteria. The reverse of course was not true, especially in a first episode study, mainly because of the Feighner six-month duration criterion. No explanation is offered for the finding of a smaller interhemispheric fissure in the Feighner schizophrenic patients versus controls. Small numbers prevented further breakdown, for example by age and scanner used, to check the validity of this result.

In conclusion, the pattern of results from CT studies in early schizophrenia is not yet sufficiently clear for confident statements to be made. Further clarification would be assisted by larger studies and greater standardisation of CT scan measurement techniques. The present study adds some weight to evidence that sulcal enlargement may be detected at first admission for schizophrenic illness, but fails to support evidence of ventricular abnormalities. The follow-up in due course will reveal whether or not there is any progression in the sulcal enlargement, and whether any other abnormalities appear.

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# Factors Associated with the Course and Outcome of Schizophrenia in India

## Results of a Two-Year Multicentre Follow-Up Study

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The paper describes the two-year follow-up results from 323 out of 386 patients fulfilling a modified version of Feighner's criteria for diagnosis of schizophrenia, in Lucknow, Vellore, and Madras. There was remission in 66% of cases. Short duration of illness, consistent compliance with medication, positive attitudes of relatives and neighbours, absence of economic difficulties, increase in religious activities on the part of patients, a rural background, and a non-schizoid pre-morbid personality were associated with good outcome. Features of depression, dangerous behaviour, and absence of agitation were associated with poor outcome.

A number of epidemiological studies in different parts of the world have reported the point prevalence of schizophrenia at about 2–3 per 1000 (Lemkau *et al*, 1942; Lin, 1953; Sethi *et al*, 1967; Dube, 1970; Verghese *et al*, 1973). Outcome is variable. The follow-up of patients diagnosed as schizophrenic in the International Pilot Study of Schizophrenia (IPSS) showed that, in spite of initial clinical similarity, there were remarkable variations in course and outcome within and across different cultures, and those in developing countries had a better outcome than those in developed countries (World Health Organization, 1979). If this variability is influenced by biological or socio-cultural factors, it is important to identify these. Hence a multicentred investigation to examine the factors associated with the course and outcome of schizophrenia was started under the auspices of the Indian Council of Medical Research (IMCR).

Three centres were selected for participation: King George's Medical College, Lucknow, Madras Medical College Hospital, Madras, and Christian Medical College, Vellore, as the co-ordinating centre. This multicentre collaborative study was envisaged as a five-year follow-up study. The present paper describes some of the important findings at two years.

## Method

All patients who attended the psychiatric clinics of the three participating centres from 15 October 1981 to 15 October 1982 and who satisfied the inclusion criteria were included in the study. These criteria were adapted from Feighner's criteria for diagnosis (Feighner *et al*, 1972), with two modifications. The duration was changed to three months, since it was felt that we might otherwise exclude some acute schizophrenic patients from the study, and marriage as a criterion was omitted for cultural reasons. All patients who were ill for more than two years were excluded. Only patients aged 15–45 years were included. Three hundred and eighty-six patients were thus studied.

The following diagnostic instruments and rating scales were used in addition to the above inclusion criteria:

(a) A detailed psychiatric history was taken from all available sources using the Psychiatric and Personal History Schedule (PPHS) (Sartorius *et al*, 1986).

(b) A detailed mental status examination was conducted using the Present State Examination (PSE) (ninth edition) (Wing *et al*, 1974).

(c) An interim follow-up schedule (IFS) provided information regarding symptomatology, details of treatment and drug compliance.

The screening schedule and PPHS were the instruments used in the WHO collaborative study on determinants of outcome of severe mental disorder (Sartorius *et al*, 1986). Some minor modifications were made to suit local conditions. The IFS was prepared specially for this study. Before beginning the study a workshop was conducted for the investigators and research officers to become familiar with the diagnostic instruments and to participate in reliability exercises.

After a detailed initial assessment using the PPHS and PSE, the patients were followed up at least once every three months using the IFS. A detailed reassessment was done once a year using the PPHS and PSE. In the case of patients who did not attend the hospital for follow-up even after reminders, domiciliary visits were made. Throughout the course of the study, every tenth patient in each centre was also assessed by a second person to assure intracentre reliability. All the investigators, co-investigators, research officers, and consultants met periodically to review the study, to share methodological problems, to assess the progress of work, to plan work for the future, and to conduct reliability studies. Based on clinical experience and reports from various studies, variables were selected that were likely to influence the course and outcome of schizophrenia.

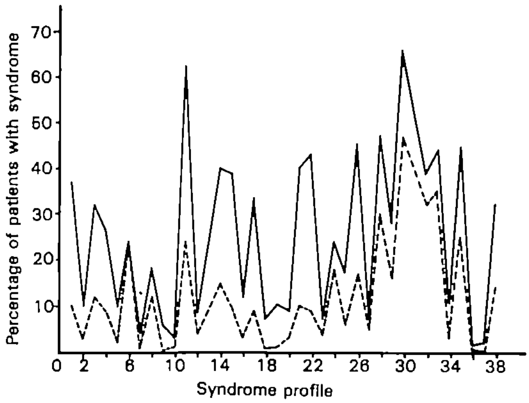

Fig. 1 Syndrome profile (—— initial syndrome profile, - - - second year syndrome profile).

A method of quantifying course and outcome was evolved, similar to the one used in the IPSS. Parameters such as the time spent in psychotic state, pattern of course (clinical outcome), and occupational and social outcome were calculated from the data collected from the PPHS, PSE and IFS. Using the above parameters an overall outcome was assessed, as was done in the IPSS, which gave the following outcome groupings: very favourable, favourable, intermediate, unfavourable and very unfavourable (World Health Organization, 1979). Further details of the methodology are given elsewhere (Verghese *et al*, 1985).

All the completed schedules were sent to the Vellore Centre, where statistical analyses were carried out. Each of the variables in the hypotheses was cross-tabulated with each one of the outcome variables, and their association tested using the $\chi^2$ test. Multiple-regression analysis was done to study the effect of controlling for the other factors.

## Results

Three hundred and eighty-six patients were studied: 207 in Lucknow, 96 in Madras and 83 in Vellore. Of these, 323 patients (84%) were followed-up (all data complete): 176 in Lucknow, 83 in Madras and 64 in Vellore. The follow-up of 63 patients could not be completed, 17 of them having died. Of these 17, 8 (2.1% of the whole sample) committed suicide, 2 died of pulmonary tuberculosis, 1 of tetanus, 2 from cardiac failure, 2 of high fever, 1 from post-partum complications, and 1 died of unknown causes.

### Psychiatric evaluation

At two-year follow-up, it was observed that about 64% of the patients were in remission, about 11% in episode of inclusion, and about 24% in a relapse episode. About 30% had had one relapse, and 13% had had two or more relapses.

The PSE at two-year follow-up showed that most of the symptoms had subsided since initial assessment (Fig. 1). The PSE syndromes of simple depression, general anxiety, affective flattening, tension, worrying, loss of interest and concentration, and other symptoms of depression (Wing *et al*, 1974) were the commonest clinical features.

Table I

*Course and outcome at two years: the three centres compared*

| *Parameter* | *Lucknow (%) (n=176)* | *Vellore (%) (n=64)* | *Madras (%) (n=83)* | *Total (%) (n=323)* |
|---|---|---|---|---|
| *Psychotic state (% of time spent)* | | | | |
| 0–15% | 67.0 | 68.8 | 48.2 | 62.5 |
| 16–45% | 22.2 | 17.2 | 33.7 | 24.1 |
| 46–75% | 9.7 | 9.4 | 10.8 | 9.9 |
| 76–100% | 1.1 | 4.6 | 7.3 | 3.5 |
| *Pattern of course (clinical outcome)* | | | | |
| Best | 39.8 | 53.1 | 50.6 | 45.2 |
| Worst | 8.0 | 7.8 | 18.1 | 10.5 |
| Intermediate | 52.3 | 39.1 | 31.3 | 44.3 |
| *Occupational outcome* | | | | |
| No impairment | 39.2 | 43.7 | 39.8 | 40.2 |
| Severe impairment | 18.7 | 10.9 | 20.5 | 17.6 |
| Some impairment | 42.0 | 45.3 | 39.9 | 42.2 |
| *Social outcome* | | | | |
| No impairment | 40.3 | 25.0 | 26.5 | 33.7 |
| Severe impairment | 12.5 | 18.7 | 8.4 | 12.7 |
| Intermediate | 47.2 | 56.2 | 65.1 | 53.6 |
| *Overall outcome* | | | | |
| Very favourable | 35.2 | 51.6 | 38.5 | 39.4 |
| Favourable | 34.1 | 17.2 | 19.3 | 26.9 |
| Intermediate | 29.0 | 25.0 | 35.0 | 29.7 |
| Unfavourable | 0.6 | 4.7 | 7.2 | 3.1 |
| Very unfavourable | 1.1 | 1.5 | 0.0 | 0.9 |

### Course and outcome

All three centres had similar rates of outcome (Table I). The best clinical outcome was seen in about 45% of patients at the two-year follow-up. About 40% showed good occupational adjustment and 34% good social interaction. About 66% of patients showed a good overall outcome (very favourable and favourable groups combined). This is close to the figures for good outcome in developing countries in the IPSS (Table II).

The operational definitions for remission and relapse were the same as those given in Appendix 1 of the PPHS: remission is a state following a psychotic episode where there are no positive or negative psychotic symptoms for at least 30 days; and relapse is the occurrence of at least one positive symptom or two negative symptoms after a period of remission. The episode of inclusion refers to the psychotic state at the beginning of the study. The PSE syndromes mentioned and depicted on the $x$-axis of Fig. 1 are as described by Wing *et al* (1974) (simple depression, 6; tension, 28; worrying, 30, etc).

TABLE II
*IPSS and present study compared*

| *Centre* | *No. of patients* | *% good outcome* |
|---|---|---|
| *IPSS* | | |
| Aarhus (Denmark) | 48 | 35 |
| Agra (India) | 88 | 66 |
| Cali (Columbia) | 72 | 53 |
| Ibadan (Nigeria) | 58 | 86 |
| London (UK) | 58 | 36 |
| Moscow (USSR) | 66 | 48 |
| Taipey (Taiwan) | 78 | 38 |
| Washington (USA) | 31 | 39 |
| Prague (Czechoslovakia) | 44 | 34 |
| Total | 543 | 51 |
| *Present study* | | |
| Lucknow | 178 | 69.3 |
| Madras | 83 | 57.8 |
| Vellore | 64 | 68.8 |
| Total | 323 | 66.3 |

TABLE III
*Variables significantly associated with good overall outcome*

| *Variables* | *Probability level of $\chi^2$ test of association (P)* |
|---|---|
| Short duration of illness | $<0.001$ |
| Regular drug compliance | $<0.001$ |
| Patient not perceived as dangerous by others | $<0.001$ |
| Non-avoidance of patient by others | $<0.001$ |
| Absence of economic difficulties | $<0.05$ |
| Increase in socio-economic level | $<0.001$ |
| Lack of dangerous behaviour | $<0.001$ |
| Rural background | $<0.01$ |
| Increase in religious activity | $<0.001$ |
| Absence of schizoid traits | $<0.05$ |

### Significant associations

A summary of factors significantly associated with overall outcome is given in Table III. Absence of clinical features, such as special features of depression and dangerous behaviour, and presence of clinical features, such as catatonic symptoms and agitation (at the time of intake), were also associated with good outcome.

On multiple regression (stepwise) of overall outcome, only six variables were significant in jointly explaining 21.85% of the variation in the outcome (Table IV). The direction of their relationship shows that the outcome deterioriates with increase in duration of illness, irregularity in drug compliance, economic difficulties, dangerous behaviour, and a decrease in religious activities and agitation as a symptom at inclusion.

TABLE IV
*Standardised partial-regression coefficient of overall outcome*

| *Significant variables* | *Overall outcome* | |
|---|---|---|
| | *Cumulative* $R^2$ | *Standardised partial-regression coefficient* |
| Drug compliance | 10.46 | 0.2775*** |
| Duration of illness | 15.83 | 0.2070*** |
| Change in intensity of religious activities | 17.64 | 0.1449** |
| Dangerous behaviour | 19.28 | 0.1321** |
| Agitation | 20.61 | 0.1225* |
| Socio-economic difficulties | 21.83 | 0.1127* |

$^*P<0.05$, $^{**}P<0.01$, $^{***}P<0.001$.

## Discussion

A short duration of illness and compliance with medication are associated with a good outcome in schizophrenia (Vaillant, 1962; Leff & Wing, 1971; Hogarty & Goldberg, 1973; Davis, 1975; Sartorius *et al*, 1977). Our study confirms this and emphasises the importance of early detection and regular treatment in the secondary prevention of schizophrenia. A schizoid personality with a lesser margin for adaptation is commonly associated with an unfavourable course (Mayer-Gross *et al*, 1969), and this study corroborates this. It may be important to identify the patients with more schizoid personality traits, and intervene to help them with coping and other skills through supportive psychotherapy and occupational therapy.

Patients coming from a rural background have a better prognosis than those coming from an urban background. The observation that schizophrenia in developing countries has a better prognosis than in developed countries (World Health Organization, 1979; Murphy & Raman, 1971) may be related to this association. One could hypothesise that the rural background ensures more social support and tolerance. This may again be related to the observation of Brown *et al* (1972) regarding the prognostic significance of expressed emotion in schizophrenia.

Some new and interesting correlates also emerged as significant factors related to the course and outcome of schizophrenia in this study. These are socio-cultural factors, such as a perception of patient as dangerous by others; avoidance of the patient by others; and change in the religious activity of the patient. If these associations are confirmed, it is possible to plan some intervention programmes, such as changing the attitudes of others to the patient, and giving more importance to various types of religious activity. Religiosity is important in Indian culture, and the increase in religiosity that was related to a better outcome in the present study could be a means of effectively handling the anxiety of the patients. Schofield *et al* (1954) followed up 210 schizophrenic patients, and identified 13 good prognostic factors, one of which was regular church attendance.

Few studies have looked at the influence of economic status on the outcome of schizophrenia. Brenner (1973) reported that the hospital admission rate in the USA was highly correlated with fluctuations in the unemployment rate over a long period of time. He suggested that unemployment leads to economic stress and family disorganisation, intolerance to the patient, and thus to admission. In the present study, economic difficulties and worsening of the economic status were strongly associated with a bad outcome, and further supports the above proposition.

It is to be emphasised that the above socio-cultural and clinical variables account for only about 22% of the variance on multiple-regression analysis. This suggests that no single factor and no combination of a small number of 'key factors' have a strong association with the course and outcome of schizophrenia. Also, the course and outcome may be associated with factors not included in this study. We shall see whether these factors identified will still be associated with outcome in the five-year follow-up. In this analysis we did not study the predictive nature of the correlates – this will be done at the five-year follow-up.

Although the IPSS was an inspiration for the present study, the objectives and methodology of the present study are different. Even so, since the assessment of course and outcome was similar in both studies, there was an opportunity to compare the course and outcome, and one is struck by the similarity between the findings at the Agra centre as reported in the IPSS and that in the three centres as reported in the present study (Table II). One of the conclusions of the present study is that course and outcome of schizophrenia in India is good, and this supports the IPSS observation. The present study shows that at the two-year follow-up about 66% of patients showed marked overall improvement. About 34% of patients do not show any degree of social impairment, and about 40% returned to their previous occupations effectively (Table I).

The three centres that participated in this study differed in socio-cultural factors. Lucknow is situated in the north, and Madras and Vellore in the south of India. Madras is a city and the patients studied there had an urban background. The patients studied in Lucknow had a rural background, while those in Vellore had a semiurban background. The clinical manifestations of the patients in the three centres were similar. At two-year follow-up, the course and outcome are similar in the three centres, although it is slightly worse at Madras. It will be interesting to know whether this trend will change at five-year follow-up. One could speculate that in Madras, being an urban area, the outcome would not be as favourable as in Lucknow and Vellore. It must also be pointed out that for ethical reasons, the methods of treatment were not controlled in the three centres, although there was in fact little variation.

The rate of suicide (2.1%) was much lower than the figures quoted in studies conducted in the West (Miles, 1977). It will be useful to examine the reasons for this, and it possibly may be due to strong social bonds or the influence of religion. This however needs more detailed analysis before any interpretation is attempted.

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# Psychiatric Disorders Among Medical In-patients in an Indian Hospital

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Psychiatric symptoms among medical in-patients in an Indian hospital were assessed: the SRQ was used as a screening instrument, and those with probable psychiatric disorders were given the PSE and MSE, for further, detailed assessment. The prevalence of psychiatric disorders was 34%, with a further 15% reporting distressing psychiatric symptoms only. The most frequent complaints were delirium and adjustment disorders. They were largely associated with connective tissue, as well as cardiovascular and endocrine, disorders, and were characterised by depression, worrying and irritability. The reliability of the SRQ varied with the cut-off score, which gave optimal specificity and sensitivity when set at 9.

The high prevalence of psychiatric morbidity among unselected samples in the community, in primary health centres, and in general practice is well known (Goldberg *et al*, 1976; Henderson *et al*, 1979; Nandi *et al*, 1979). Relatively few studies (Maguire *et al*, 1974; Lloyd, 1985; reviewed by Mayou & Hawton, 1986) have attempted to evaluate the prevalence of psychiatric disorders among general medical in-patients. Most studies have used either specialised patient populations (e.g. cardiology patients) or specific illnesses (e.g. anxiety or depression). These studies found a high prevalence of psychiatric symptoms and disorders. Such work has not been done in developing countries, to the best of our knowledge. While the nature of psychiatric disorders among Indian in-patients referred to liaison psychia-trists has been examined (Wig & Shah, 1973; Jindal & Hemrajani, 1980), these studies do not reveal the real extent of the problem.

The prevalence of psychiatric symptoms in a general medical ward was estimated in the present study. Following an initial screening with the Self-Reporting Questionnaire (SRQ) (Harding *et al*, 1983), psychiatric symptoms were identified using the Present State Examination (PSE) (Wing *et al*, 1974). The nature of the symptoms and their relationship to the coexisting physical illnesses were investigated. Many psychiatric symptoms are non-specific and occur across a spectrum of physical and psychiatric illnesses. We therefore attempted to identify symptoms listed in the PSE that would best discriminate between psychiatric 'cases' and 'non-cases' diagnosed by ICD–9 criteria (World Health Organization, 1978).

Psychiatrists have long been in search of a brief, reliable questionnaire for psychiatric epidemiological surveys. The SRQ, developed for use in the primary health care setting, is one such tool (Harding *et al*, 1980). It was developed from the General Health Questionnaire (Goldberg & Blackwell, 1970), the PSE (Wing *et al*, 1974), the Postgraduate Institute Health Questionnaire N-2 (Verma & Wig, 1977), and the Patient Self-Report Symptoms form, developed and tested in Cali, Colombia. It has been translated into eight languages and validated in five countries. It was used to measure psychiatric morbidity in developing countries in a study aimed at extending mental health care, and considerable variation of optimal cut-off points to define 'caseness' was found, because of differences in response rates (Harding *et al*, 1983). The sensitivity of the SRQ varied between 73% and 83% in the four areas studied by these workers (Colombia, India, Senegal and Sudan), while the specificity lay between 72% and 85%. Thus, overall misclassification in a population with a psychiatric morbidity of 15% varied between 18% and 24% (Harding *et al*, 1980). Satisfactory levels of specificity and sensitivity were obtained by careful calibration of cut-off points, which varied between 3 and 11.

In the present study, the SRQ was validated against ICD–9. The PSE was used as an "adjunct to clinical judgement" (Wing *et al*, 1978; Wing, 1980), but the Catego and ID programmes were not used.

## Method

The All India Institute of Medical Sciences (AIIMS), New Delhi, is a general hospital, which accepts referrals from the whole country. It has special wards for cardiac, neurological, gastroenterological and psychiatric disorders, as well as general medical wards, which normally accept all medical patients before referring them to the specialist wards if required. The latter also accept admissions directly from the out-patient clinics. Most neurological and psychiatric patients are admitted directly to the respective specialist wards. Patients admitted to one of the general medical wards at the AIIMS were examined in the present study.

The SRQ was administered during a pilot study to 50 randomly selected in-patients. A detailed history was taken, and a mental state examination (MSE) performed. 'Caseness' was determined using ICD-9 by the same person who administered the SRQ. A cut-off point of 11 on the SRQ was selected on this basis for the next stage of the study, during which a two-stage screening procedure (Duncan-Jones & Henderson, 1978) was used over six months. The SRQ was administered in Hindi or English to all patients admitted to the designated ward on the third day after admission. The delay enabled the patients to settle down. The PSE (ninth edition) was then administered in English or Hindi (Wig *et al*, 1982) to patients scoring 11 or more on the SRQ, a random sample of those scoring below 11, and to patients referred to the liaison psychiatrist. The interview was conducted by a psychiatrist trained to administer the PSE (SND). A conventional psychiatric evaluation, including history from the patient and from a relative, was also performed. Some patients who could not co-operate for the SRQ but who were obviously psychiatrically ill (e.g. those in acute confusional states) were assessed clinically.

Based on ICD-9 criteria, patients were divided into three groups by the same worker who administered the SRQ and the PSE (SND):

(a) Cases – patients with symptoms diagnosed according to ICD-9
(b) Non-cases – patients without significant psychiatric symptoms
(c) Cases with subdiagnostic syndromes – patients with distressing psychiatric symptoms who could not be diagnosed by ICD-9 criteria. Such cases were grouped with the 'non-cases' for validation of the SRQ, as they do not appear to have a place in the existing diagnostic classification.

Of the 737 patients admitted to the ward, 350 participated in the study. The SRQ was administered to 326 patients, and the PSE and MSE to 68 patients who scored 11 or more on the SRQ, and to 90 patients selected randomly from among those who scored less than 11. A psychiatric diagnosis was then assigned. Twenty-four patients (21 with delirium, 3 with mental retardation) who could not answer the SRQ because they were too ill, were assigned a psychiatric diagnosis on the basis of the MSE alone.

Those excluded from the study included patients in extremis or those who died within three days of admission ($n = 129$), those under 15 years of age ($n = 26$), those who stayed for less than three days ($n = 159$), ten readmissions who had already been included in the study, and failure to complete the questionnaires ($n = 63$). No patient refused a psychiatric interview, and all spoke Hindi or English.

### Statistical analysis

The PSE was the main instrument used to diagnose psychiatric 'caseness'. Because the PSE was administered to only 158 (45%) of the cohort, a correction factor was required while calculating the prevalence of psychiatric cases. Goldberg (1978) has recommended the use of a 'weightage factor' under such conditions. This factor was the ratio, at each SRQ score (0–20), of the number of patients who answered both the SRQ and the PSE, to those who answered the PSE alone. The number of 'cases' identified by the PSE at each SRQ score were multiplied by the respective weightage factors. The sum of these numbers, along with the number identified clinically ($n = 24$), was taken as the total number of cases in the whole cohort ($n = 350$), and was used to calculate the prevalence of psychiatric cases. The prevalence of 'subdiagnostic syndromes' was calculated in a similar manner.

In order to identify symptoms listed in the PSE which best discriminated between 'cases' and 'non-cases', the prevalence of such symptoms among the two groups was compared using the $\chi^2$ test. The patients with the 'subdiagnostic syndromes' were grouped with the 'non-cases'. Student's *t*-test was used to compare the mean numbers of symptoms between groups. The specificity and sensitivity of the SRQ were calculated by the method of Goldberg (1978).

## Results

### Validity of the SRQ

Among the patients administered both the SRQ and the PSE ($n = 158$), 42 received a psychiatric diagnosis. The sensitivity and specificity of the SRQ in detecting 'caseness' are listed in Table I. At a cut-off score of 11, the specificity was 74%, whereas the sensitivity was 47%. The optimal combination of specificity (63%) and sensitivity (62%) was obtained when the cut-off point was 9. In general, high SRQ scores were associated with psychiatric illness, although the relationship was not absolute. The mean score for the whole sample was 7.8 (s.d. 4.9). Female patients had a significantly higher mean score than the male patients on the SRQ (females: $8.5 \pm 5.1$, $n = 197$; males $7.3 \pm 4.8$, $n = 129$; $P < 0.05$, Student's *t*-test).

### Prevalence of psychiatric symptoms

The prevalence of definite psychiatric disorders was 34.3%. An additional 14.8% had significant psychiatric symptoms that could not be diagnosed using ICD-9. Thus 49% of the sample had distressing psychiatric symptoms (Table II).

The most common psychiatric diagnoses were acute confusional states (delirium), adjustment disorders, and anxiety-depressive neuroses (Table III). There were no cases of hysteria, and none of the patients answered the questions related to psychoses affirmatively. Although a diagnosis of hysteria was initially considered in a few cases, the symptoms were later explained by the concomitant physical illness. There was no difference in the prevalence of various psychiatric illnesses with respect to sex, age, or marital status. The prevalence was also similar in different groups if the cases were divided according to educational levels or occupational status (data not shown – available from SND).

Pyrexias (24%) or renal failure (24%) were the clinical diagnoses most often made in cases with acute confusional states ($n = 21$). Other clinical diagnoses included systemic

TABLE I
*Specificity and sensitivity of the SRQ at different scores* (n = *326)*

| *SRQ scores* | *Non-cases: No.* | *%* (n = *116)* | *Cases: No.* | *%* (n = *42) %* | *Sensitivity (%)* | *Specificity (%)* |
|---|---|---|---|---|---|---|
| 0 | 116 | 100 | 42 | 100 | 100 | 0 |
| 1 | 105 | 90.5 | 42 | 100 | 100 | 7.6 |
| 2 | 96 | 82.8 | 42 | 100 | 100 | 13.9 |
| 3 | 83 | 71.6 | 42 | 100 | 100 | 24.6 |
| 4 | 71 | 61.2 | 40 | 95.2 | 96.1 | 33.8 |
| 5 | 68 | 58.6 | 38 | 90.5 | 91.0 | 39.9 |
| 6 | 65 | 56.0 | 37 | 88.1 | 91.8 | 47.8 |
| 7 | 63 | 54.3 | 34 | 80.9 | 77.4 | 51.1 |
| 8 | 63 | 54.3 | 31 | 73.8 | 66.6 | 54.4 |
| 9 | 55 | 47.4 | 30 | 71.4 | 62.9 | 62.0 |
| 10 | 50 | 43.1 | 26 | 61.9 | 51.5 | 66.9 |
| 11 | 43 | 37.1 | 25 | 59.5 | 46.6 | 74.1 |
| 12 | 37 | 31.9 | 22 | 52.4 | 39.0 | 78.6 |
| 13 | 28 | 24.1 | 17 | 40.5 | 28.2 | 84.5 |
| 14 | 21 | 18.1 | 16 | 38.1 | 24.2 | 88.2 |
| 15 | 11 | 9.5 | 14 | 33.3 | 24.8 | 93.5 |
| 16 | 5 | 4.3 | 13 | 30.9 | 21.7 | 97.3 |
| 17 | 4 | 3.4 | 9 | 21.4 | 12.8 | 98.1 |
| 18 | 1 | 0.9 | 5 | 11.9 | 7.0 | 99.5 |
| 19 | 0 | 0 | 1 | 2.4 | 1.2 | 100 |
| 20 | 0 | 0 | 1 | 2.4 | 1.2 | 100 |

TABLE II
*Prevalence of psychiatric symptoms among 350 patients interviewed*

| | *Number identified* | *Percentage prevalence*[1] |
|---|---|---|
| (a) Patients with ICD-9 diagnoses | 66 | 34.3 |
| (b) Patients with significant psychiatric symptoms but no ICD-9 diagnosis (subdiagnostic syndromes) | 28 | 14.8 |
| (c) Patients with significant psychiatric symptoms (a + b) | 94 | 49 |

[1] Weighted figures, using prevalence data from patients administered the PSE (Goldberg, 1978). A psychiatric diagnosis on the basis of ICD-9 was made either following a PSE (42 cases) or MSE (24 cases).

lupus erythematosus (14%), pulmonary tuberculosis or progressive systemic solerosis (10% each), ascites, lobar consolidation, anaemia or malignancy with generalised metastases (5% each). Diseases of the cardiovascular system (19%) or the endocrine system (17%) were commonly present in cases with psychiatric diagnoses (other than acute confusional states or mental retardation) ($n = 42$). Disorders of other organs were also noted in smaller numbers in this group.

For the patients interviewed, the number and pattern of symptoms listed in the PSE were compared between 'cases' and 'non-cases', the latter including those with significant psychiatric symptoms not diagnosed as psychiatric illness. As expected, 'cases' had significantly more symptoms than 'non-cases' (cases: 11.6 ± 6.2, $n = 42$; non-cases: 2.5 ± 3.5, $n = 116$; $P < 0.001$, Student's $t$-test).

The following symptoms were infrequent among non-cases but common among cases: free-floating autonomic anxiety, anxious foreboding with autonomic components, self-depreciation, subjectively inefficient thinking, lack of self-confidence with other people, and simple ideas of

TABLE III
*ICD-9 diagnoses of the 66 cases identified in the study*

| *Diagnosis* | *Number* | *%* |
|---|---|---|
| Acute confusional state[1] | 21 | 31.8 |
| Residual schizophrenia | 1 | 1.5 |
| Manic-depressive psychosis, depressed type | 2 | 3.0 |
| Anxiety states | 7 | 10.6 |
| Obsessive-compulsive disorder | 1 | 1.5 |
| Neurotic depression | 8 | 12.1 |
| Hysterical personality disorder | 1 | 1.5 |
| Alcohol dependence syndrome | 1 | 1.5 |
| Drug dependence, cannabis | 1 | 1.5 |
| Adjustment reaction | 20 | 30.3 |
| (a) brief depressive reaction | (7) | — |
| (b) with predominant disturbance of other emotions | (13) | — |
| Moderate to severe mental retardation[1] | 3 | 4.6 |

[1] PSE not possible.

TABLE IV
*Frequency and prevalence of symptoms among cases and non-cases*

| *Symptom (PSE)* | % *cases* *(n=42)* | % *non-cases* *(n=116)* |
|---|---|---|
| Depressed mood | 65.8 | 12.0*** |
| Worrying | 65.8 | 23.9*** |
| Irritability | 65.8 | 35.0** |
| Loss of interest | 56.1 | 8.8*** |
| Poor concentration | 51.2 | 8.8*** |
| Tiredness | 45.4 | 7.8*** |
| Subjective feeling of nervous tension | 45.0 | 20.5** |
| Delayed sleep | 43.9 | 7.6*** |
| Subjective anergia and retardation | 40.0 | 4.4*** |
| Muscular tension | 36.8 | 6.8*** |
| Tension pains | 30.8 | 11.1* |
| Restlessness | 30.0 | 6.0*** |
| Hopelessness | 29.3 | 1.7*** |
| Suicidal plans or ideas | 26.8 | 1.7*** |
| Neglect due to brooding | 26.8 | 2.5*** |
| Loss of weight due to poor appetite | 25.6 | 3.6*** |
| Social withdrawal | 21.9 | 4.3*** |
| Free-floating autonomic anxiety | 20.0 | 0.0*** |
| Anxious foreboding with autonomic components | 20.0 | 0.0*** |
| Self-depreciation | 14.6 | 0.8*** |
| Subjectively inefficient thinking | 12.5 | 0.8** |
| Lack of self-confidence with other people | 9.7 | 0.0** |
| Simple ideas of reference (marked self-consciousness only) | 0.6 | 0.0[1] |

*$P<0.05$; **$P<0.01$; ***$P<0.001$.

1. Statistical analysis not performed.

reference (Table IV). Depressed mood, worrying, irritability, loss of interest and poor concentration were the most frequent symptoms, being present in more than half the cases. Among the patients with 'subdiagnostic syndromes', anxiety and its autonomic manifestations were more common than depression. No patients with phobic symptoms, delusions, hallucinations or manic symptoms were detected in either group. Positive ratings for behaviour, speech, and affect were uncommon – less than ten patients manifested these features on the PSE.

## Discussion

A 49% prevalence of psychiatric disorder was noted in the present study. In comparison, studies conducted in the West have reported prevalence rates for psychiatric illness varying between 25% and 80% (reviewed by Mayou & Hawton, 1986). Maguire *et al* (1974) used a two-stage design similar to ours, and reported a prevalence of 23% for psychiatric 'caseness' in two medical wards in the UK. A quarter of their cases had "mild psychiatric illness", which may correspond to adjustment disorders or subdiagnostic syndromes in our study.

This study was conducted in a general medical ward, because psychiatric referrals are most likely in such settings in India (Wig & Shah, 1973; Jindal & Hemrajani, 1980). Although a relatively high prevalence of both psychiatric 'cases' and subdiagnostic syndromes were detected, only a small proportion of such individuals are eventually referred to liaison psychiatrists. Wig & Shah (1973) found that 1.17% of all hospital admissions were referred thus, while Jindal & Hemrajani (1980) reported a referral rate of only 0.15% among in-patients and out-patients. Such a disparity may reflect a bias against psychiatric referral among medical specialists, an inability to detect psychiatric problems, or an unwillingness of the patients to see a psychiatrist. The latter seems unlikely, because none of the subjects in the present study declined a psychiatric interview.

The high prevalence of delirium noted here was not unexpected, because of the nature of the patient population, and similar rates have been reported elsewhere (Wells, 1985). In addition, many of the seriously ill patients who could not be interviewed may also have been delirious. More notably, the delirium was thought to be drug-induced in several cases. However, the drugs could not be discontinued, and a drug-related aetiology remains inconclusive. Clinically, florid 'violent' delirium was much less common than apathy and social withdrawal. Delirious patients were often detected during our assessment because they were withdrawn and confused, but ward personnel were unaware of these quiet, non-interfering patients. There were no cases of dementia, as they were treated in psychiatric or neurological wards. It is possible, of course, that an underlying chronic organic brain syndrome was present in some of these cases.

Adjustment disorders, the next largest group, were usually precipitated by the illness itself, or admission and concomitant family problems. Mayou & Hawton (1986) and Lloyd (1985) have emphasised its common occurrence in haemodialysis wards and acute cardiac care units respectively. Maguire *et al* (1974) described a group of "mild psychiatrically ill" patients, which may have included this group. They felt that mood disturbances were due to physical illness among 38% of such patients. Adjustment disorders with anxiety were commoner than adjustment disorders with depression in this study.

Anxiety neurosis was diagnosed in 11% of patients and depressive neurosis in 12%, similarly high proportions to those in Western samples (Lloyd, 1985; Mayou & Hawton, 1986). Although we found no age-related differences in symptoms, Mayou & Hawton (1986) have suggested that affective disorders are more common among young female patients who are less educated.

The present study did not detect any cases of hysteria, although a diagnosis of hysterical personality disorder was made once. If hysteria was suspected, further tests invariably revealed a physical illness that could explain the symptoms. These findings are of interest and may be due to a change in the incidence of hysteria in India. There were few alcohol-related problems, as they were treated in psychiatric, gastroenterology or cardiac wards. It is of interest that no psychotic features were identified among the patients screened using the SRQ. A diagnosis of residual schizophrenia ($n = 1$) or manic–depressive psychosis ($n = 2$) was, however, made on the basis of a psychiatric history. However, it must be noted that a significantly high proportion of admissions to the ward could not be screened, and this may explain the curious uniformity of prevalence of psychiatric disorders with respect to age, sex, occupational or educational status.

Psychiatric illness (excluding delirium) occurred in patients with various physical illnesses, with cardiovascular diseases and endocrine diseases being the two commonest. Acutely ill patients were more likely to be suffering from delirium, whereas the chronically ill suffered more often from neurotic or adjustment disorders. Connective tissue diseases were commonly associated with depression or delirium.

We used strictly defined symptoms because psychological and psychophysiological symptoms are distributed on a continuum in populations. Symptoms had to conform to known disease constellations; for example, a person with a single symptom, such as compulsive behaviour, was a 'case', whereas a patient with a number of mild symptoms could be classified as a 'non-case'. Even so, the average number of PSE symptoms was significantly higher among cases than non-cases. Among psychiatric cases, the three commonest symptoms were depressed mood, worrying and irritability. The latter two symptoms were less common among non-cases, and depressed mood was present in only 12% of non-cases. Thus it may be normal for a physically ill person to be irritable or to worry, but depression (perhaps indicating 'giving up') appears more significant. Interestingly, Lloyd (1985) suggests that affective disorders are common in physically ill populations, with anxiety preceding depression.

There were numerous causes for the 'subdiagnostic' group of symptoms. Many patients were apprehensive about their physical illnesses, which were often serious, causing, for example, sleeplessness or social withdrawal. The commonest psychosocial problems were lack of economic resources or social insecurity, and strained interpersonal relations. Additional physical illness probably precipitated psychiatric symptoms in such individuals. The outcome of these symptoms can be determined only by longitudinal follow-up studies. Our subjective impression was that the psychiatric interview itself helped many in this group.

There is at present no satisfactory method of distinguishing between normal psychological problems and 'real' illness, except in severe or chronic cases. There exists between these extremes "a large grey borderline area of patients in distress, who may be ill or in the process of becoming ill, but equally may be experiencing normal emotional reactions in difficult circumstances" (Ingham, 1982). Our methods of classification must create a place for these mild psychiatric symptoms. Non-psychiatric ward personnel must also be trained in detecting and counselling such patients.

The two-stage screening procedure was satisfactory, although at the end of the study, a cut-off score of 11 was found to be unsatisfactory. A lower cut-off (9 or lower) may be better (see Table I). Problems also arose when defining a 'case'. Using ICD–9 criteria, a 'subclinical, subdiagnostic' group of patients, with definite psychiatric symptoms, could not be categorised. For statistical analysis, we treated 'subdiagnostic syndromes' as 'non-cases', although these syndromes could have been counted among cases, using a broader definition (World Health Organization, 1960). This problem has been described previously (Goldberg *et al*, 1976; Wing, 1976, 1980).

Some questions in the SRQ appear unsuited for general medical patients, for example those on sleep, appetite or work, as such questions are usually answered in the affirmative and increase the SRQ score. The specificity and sensitivity of the SRQ may be improved by modifying the SRQ accordingly, and this issue needs to be explored further. Female patients obtained higher scores on the SRQ than male patients, which may reflect a greater willingness of women to admit to psychiatric symptoms, although no difference in the prevalence of psychiatric disorder between the two sexes was noted.

We conclude that psychiatric illnesses are common in medical wards but tend to be missed. Minor procedural modifications, for example routinely checking orientation and recent memory, would help in the diagnosis of delirium, and a few questions about mood would help detect anxiety or depression. Short-term counselling by ward personnel will also prove useful, as such a high number of patients cannot possibly be looked after by psychiatrists. Our clinical impression was that few patients diagnosed as having psychiatric illnesses needed pharmacotherapy or expert counselling.

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# The Psychiatrist in the Obstetric Unit
## Establishing a Liaison Service

LOUIS APPLEBY, HELENA FOX, MIKE SHAW and R. KUMAR

The establishment and first 18 months of a psychiatric liaison service to a general hospital obstetric unit are described. The service was initially intended to predict antenatally those at risk of post-natal depression and to offer follow-up throughout pregnancy and in the post-natal period. However, a large proportion of referrals were of women currently unwell. Furthermore, post-natal follow-up in the community proved difficult. Referrals, diagnoses and disposal are analysed, leading to conclusions about the effectiveness and problem of such a service. The components of a comprehensive obstetric liaison provision are proposed, emphasising the need for strong community links built around a CPN service, allowing adequate postnatal psychiatric care.

The increased risk of mental illness in newly delivered mothers has been recognised since Esquirol's (1845) description of post-partum psychosis. More than a century later, Paffenbarger (1964) showed that admissions to mental hospitals increased 18-fold during the first post-partum month, a finding supported by subsequent epidemiological studies (Kendell *et al*, 1976, 1981*a*). The more severe forms of illness are relatively rare, puerperal psychosis occurring after one delivery in 500 (Hemphill, 1952; Paffenbarger, 1964; Grundy & Roberts, 1975; Kendell *et al*, 1981*a*). Non-psychotic depressive illnesses are common, however, following 10–15% of deliveries in most studies (Pitt, 1968; Cox *et al*, 1982; Kumar & Robson, 1984; Watson *et al*, 1984). Although the 'maternity blues' occur after most deliveries, they are a mild, self-limiting condition not requiring treatment (Kendell *et al*, 1981*b*; Stein, 1982). Post-natal neurotic depression, therefore, constitutes the bulk of psychiatric morbidity related to childbirth. An obstetric service dealing with 2500 deliveries per year can expect up to seven new cases of depression per week, making it one of the commonest of all medical complications of pregnancy, carrying with it risks to both mother and infant (Wrate *et al*, 1985; Cogill *et al*, 1986).

Cox (1983), acknowledging that much post-natal psychiatric morbidity is missed, suggests several reasons:

- (a) mother's reluctance to describe low mood
- (b) low mood assumed to be the blues
- (c) medical emphasis on the mother's physical condition
- (d) insufficient psychiatric training of obstetric and community staff
- (e) patients often discharged before the onset of depression
- (f) reluctance to prescribe to breast-feeding mothers.

To identify likely post-natal depression sufferers once they have delivered, Cox *et al* (1987) designed the Edinburgh Postnatal Depression Scale. However, research into the psychosocial correlates of post-natal depression has suggested a link between maternal characteristics evident during pregnancy (e.g. ambivalence about the pregnancy, marital difficulties, a past history of depression) and later development of post-natal depression (Kumar & Robson, 1984; Watson *et al*, 1984). 'At-risk' women may therefore be identified before delivery, allowing preventive measures or early treatment.

We describe the first 18 months of a liaison psychiatric service to the obstetric department of a large teaching hospital. The service was set up in 1985 with the principal purpose of antenatal detection of risk, leading to post-natal follow-up, with treatment of those women with mental disorder.

### Establishing and developing the service

The obstetric unit of King's College Hospital serves a predominantly poor central area of London, and annually has almost 2500 deliveries. Attached to the antenatal clinic are two full-time social workers. Before the service described here was established, the unit could refer to the hospital's general psychiatric liaison service. There was no facility for admission to King's College Hospital itself of mentally unwell mothers with their babies, although there was access to an eight-bed mother and baby unit at the Bethlem Royal Hospital.

Formal obstetric–psychiatric liaison began in April 1985, with direct psychiatric cover provided by successive registrars, under the supervision of a consultant psychiatrist with clinical and research interest in post-partum disorders. Two sessions per week were officially allocated to this work, primarily in the antenatal clinic, but also in the in-patient obstetric unit. In practice this time proved inadequate. Obstetric medical and nursing staff were asked to refer any woman who, on routine formal screening at first antenatal booking, reported a past history of depression, and who agreed to counselling during and after the pregnancy. Once the referral process was established, referrals included those considered at risk on social or psychiatric grounds, and anyone thought to show current psychiatric symptoms. On average this amounted to two new cases per week. The rate of referral increased during the first year but not thereafter; rarely did referrals seem inappropriate. The use of the obstetric unit as a setting for psychiatric consultation was intended to reduce the stigma of psychiatric referral.

After six months, weekly case discussions were established in the antenatal clinic. These allowed midwives to discuss potential referrals with the psychiatrist, who, by screening cases and offering midwives advice on counselling, was able to use the limited sessions more efficiently. Later the obstetric social workers and a clinical psychologist attended these case discussions, helping to clarify the basis on which cases were referred across disciplines.

Regular contact with and almost continuous availability to the obstetric in-patient unit allowed referral of new, usually post-natal, cases. It also enabled the registrar to follow-up newly delivered 'at-risk' women, including those not previously detected or failing to attend antenatally.

Follow-up after discharge relied principally on out-patient attendance, supplemented by liaison with community midwives, who visit all newly delivered mothers for 14 days. By attending the midwives' monthly meetings, the psychiatrist could alert them to current or potential cases under their care. Conversely, the meetings allowed community midwives to refer new cases.

Although the liaison service placed emphasis on assessment of risk and management of current psychiatric disorders related to pregnancy, there were other areas of obstetric practice requiring psychiatric advice. Additional functions included counselling after stillbirth, assessment of referrals from pregnancy failure clinics, and attendance at child-care conferences.

## Results

Of a total of 112 referrals, 92 were assessed. This figure excludes patients who were the subject of antenatal case discussions but who were not interviewed. Figure 1 shows the number of patients interviewed, the timing of referral, and the reason for referral (risk or current symptoms). Surprisingly perhaps, the original design of the service – antenatal detection of 'at-risk' but currently well women – did not account for the largest part of the work in practice. Only 15% of patients were referred during the first 18 weeks of gestation (at or soon after antenatal clinic booking). Only 58% of referrals were made antenatally, and almost half of these were for current symptoms. The weekly rate of referral was highest during the first post-natal week (29% of the total), presumably the result of closer medical and nursing supervision. Current symptoms were likely to be the reason for post-natal referral (74%).

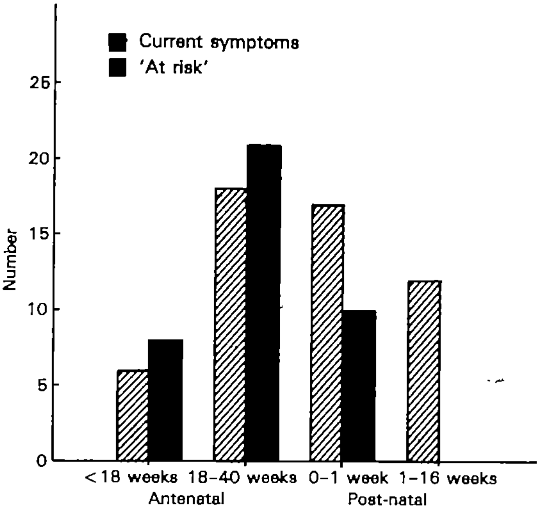

FIG. 1 Number and timing of referrals leading to assessment.

Figure 2 presents the clinical diagnoses made at initial interview. As expected, the commonest diagnoses were of neurotic disorders, particularly neurotic depression, the latter accounting for 22% of all patients interviewed and 43% of those given a clinical diagnosis. Of all patients interviewed, 49% received no clinical diagnosis, 60% of these having been referred primarily because of risk.

The disposal of patients following referral and initial assessment is shown in Fig. 3. Eight per cent were admitted following the first interview and 38% were followed up as out-patients (three were later admitted). Of those referred, 18% failed to attend their first appointment and a further 16% dropped out after the assessment interview. The latter group was almost twice as likely to have been given no clinical diagnosis (72%) than those who did attend for a subsequent appointment (38%), although they

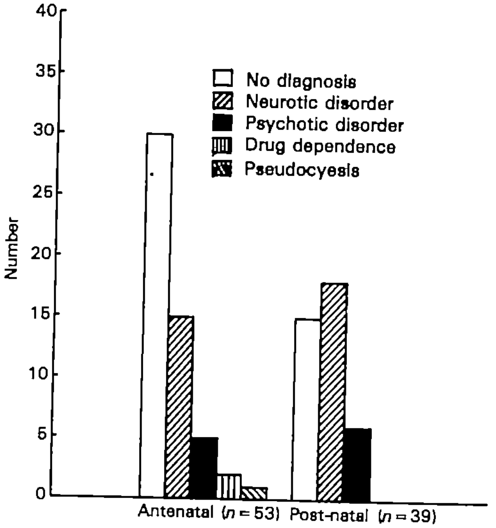

FIG. 2 Clinical diagnoses of 92 patients at initial interview.

were equally likely to have been referred because of current symptoms.

## Case reports

### Case 1

This case is an example of antenatal referral on grounds of current symptoms and future risk. Antenatal contact with the psychiatrist facilitated detection and treatment of post-natal psychiatric disorder.

A 38-year-old married nurse was referred from the obstetric in-patient unit, where investigations for abdominal pain and vomiting had proved negative. She was anxious about these symptoms and their possible effect on her 32-week pregnancy, and she was afraid of leaving hospital. Although pleased to be pregnant, she had initially been anxious because of two previous miscarriages, and this fear was increased by the diagnosis of a cervical tear. Persistent vomiting and abdominal pain led to her admission at 23 weeks' gestation, and improved a little on bed rest, although no cause was found.

There was no family history of psychiatric illness. The patient described a good relationship with both parents, although she considered her mother to be dominant and perfectionist. At the age of six she had suffered from meningitis and as a result lost one year of schooling. Throughout her childhood she was conscious of being older than her classmates and found it difficult to make friends. She met her husband at age 25 ; like her, he was religious and he later trained as a Methodist minister. He had been supportive during her pregnancy. The patient had no psychiatric history.

Mental state examination revealed an anxious, worried lady who did not seem clinically depressed. She was highly self-critical over her inability to cope with the physical and mental stress of pregnancy, feeling she had let down her husband, herself, and God. She described great anxiety whenever she left the ward. A diagnosis of anxiety was made. She was also felt to be at considerable risk of post-natal depression because of her age, her previous pregnancy failures, her fears for the foetus, and her current symptoms. Over the next month she was encouraged to spend time at home before being discharged. Nursing staff offered her opportunities to discuss her fears. The psychiatrist saw her on two more occasions for supportive psychotherapy.

Delivery was normal. Before discharge the patient was found to be mentally well. However, early follow-up was arranged, and at the first appointment her self-criticism

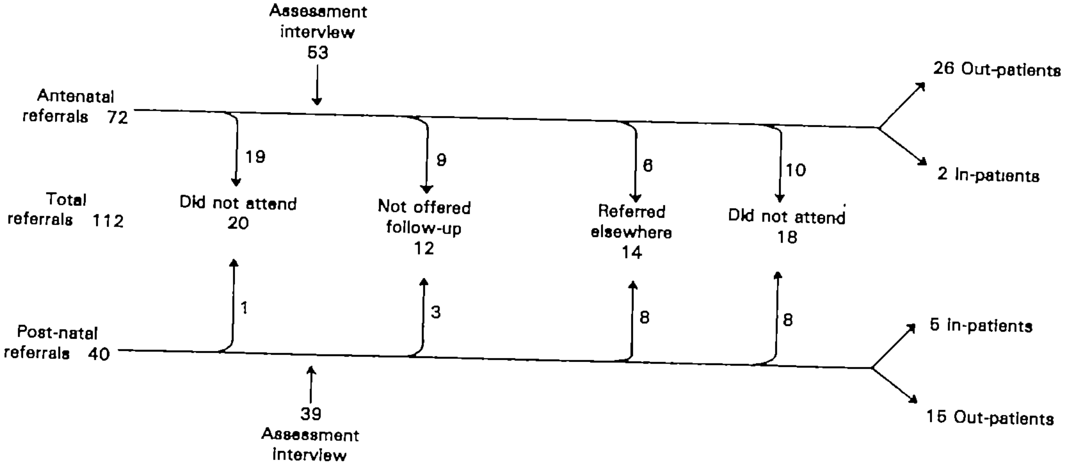

FIG. 3 Referrals to liaison psychiatrist and 'outcome' following initial assessment during first 18 months of service. Birth rate – 2500 deliveries/year. Additionally, about one subject per week was managed by obstetric/midwifery staff and discussed with psychiatrist.

and anxieties about caring for her baby were noted. Two weeks after discharge she became depressed, exhausted and very tense. She reported early morning waking and low appetite. She cried frequently and criticised her own ability to cope with her husband and baby. Her condition deteriorated over the next few days, and although she refused admission, she agreed to attend the psychiatric out-patients department every few days and to take amitriptyline. Her mother and husband offered her practical support with the baby, and after two weeks she began to improve, feeling more positive about the baby, and less gloomy and tired. From then on her progress was good and she was discharged well six weeks later.

### Case 2

This patient was first referred soon after delivery. The close post-natal follow-up she required would have proved particularly difficult without a specific obstetric liaison service.

She was referred, aged 32, by the in-patient obstetric unit because of anxiety during her first post-natal week. No antenatal referral had been made, but the patient had been often upset by events during her pregnancy, which, although it was unplanned, both she and her co-habitee had been keen to continue. However, inconsistent pregnancy test results and uncertainty over her last menstrual period were both unsettling to her. In the first trimester an elevated blood alpha-foeto-protein level raised the possibility, subsequently disproved, of foetal abnormality. Later, because of a breech lie, there was repeated discussion of Caesarean section, which she feared.

The delivery itself also upset her, initially because it was delayed owing to an emergency elsewhere. She was concerned about the safety of her epidural anaesthetic and found the stitching procedure unpleasant, although the operation itself was less traumatic than anticipated. She was very anxious about foetal abnormality during the delivery, and immediately afterwards felt afraid of dropping her child. In the next few days she developed a urinary tract infection, and complained that noise in the ward kept her awake. Although coping well with her baby, she often complained of a fear that she would drop him. Five days after the birth she thought other patients were watching and talking about her, and became afraid that her boyfriend was planning to leave her. She experienced a recurrent mental image of her baby falling to the floor.

She had no history of psychiatric illness. Both she and her partner had been married before and each was involved in acrimonious divorce proceedings. The patient had one child by her former marriage. The only significant family history was an aunt's psychotic illness. Psychiatric assessment took place eight days after the birth, by which time her mental state was entirely normal. Follow-up one week later was arranged in case of recurrence. During the next three weeks the patient became depressed, with early morning waking, loss of appetite, retardation, and delusions of guilt and persecution. She was unable to care for her baby without the help of her family. Medication and hospital admission were refused. Management therefore consisted of hospital attendance for assessment on every second day for two weeks. By the fifth week after the birth, improvement was noted in mood and her delusions became less certain. She made a full recovery after a further month.

### Case 3

This case exemplifies the problem of inadequate post-natal follow-up of a depressed patient whose risk was identified antenatally.

A 21-year-old unmarried, unemployed woman was referred at 18 weeks' gestation from her first antenatal appointment, because of her psychiatric history. This was her fourth pregnancy. The first two, one of which was to her brother, were terminated, and the third had ended in miscarriage. The current pregnancy had been unplanned, but both the patient and her boyfriend, with whom she lived, wanted it to continue.

There was no family history of psychiatric illness, but she described poor relationships with both parents and several of her 11 siblings. She had been an anxious, moody, isolated child, who suffered from enuresis until nine years old. There had been one previous psychiatric admission two years earlier, with a diagnosis of anorexia nervosa and depression. She had taken eight overdoses and had twice swallowed safety-pins as acts of self-harm. At assessment she spoke little and was unsmiling, but fairly co-operative. She was neither depressed nor anxious. She was judged because of her history to be at major risk of post-natal depression, and was seen regularly throughout pregnancy for assessment and to establish supportive contact. Her mood remained unchanged, although she was never enthusiastic about her pregnancy.

After delivery she was initially well and for a time seemed happy, coping successfully with the baby, but at four weeks she became depressed, with disturbed sleep and irritability. Contact was maintained for a further month, at which time she failed to attend the out-patient clinic, and letters encouraging her to attend had no effect thereafter. Community midwives reported that she was managing her baby adequately but remained depressed. Her general practitioner was notified of her condition. No further contact occurred with the liaison psychiatrist.

## Evaluating the service

Many studies have reported high rates of psychiatric disorder in hospital populations (Mayou & Hawton, 1986) and general practice attenders (Shepherd *et al*, 1966). Patients attending antenatal clinics are different from these, in that their hospital attendance does not result from physical complaints, the reporting of which may be increased by accompanying psychological morbidity. Nevertheless, the substantial link between mental disorder and pregnancy, the large numbers of women attending obstetric units, and the specific problems of psychiatric management emphasise the need for specialised liaison work. Furthermore, since the timing of delivery is predictable and the periods of maximum risk are known, the obstetric liaison service can concentrate on the most vulnerable individuals at their most vulnerable time.

For this reason, Riley's (1986) account of an obstetric liaison service stressed its concern "more with prevention than with treatment".

Although the King's College Hospital liaison service had been intended to practise preventive psychiatry, many of its referrals were already mentally unwell, usually depressed. Where would they have been seen previously? The most severe cases may have been admitted to a psychiatric ward, such as the Bethlem Mother and Baby Unit. Milder cases may have been referred to social workers or detected by general practitioners, community midwives or health visitors. It seems likely though that many would have been seen by no one.

It could be argued that many referrals were unnecessary, however, since almost 50% received no psychiatric diagnosis. How should this figure be explained? One possibility is that the threshold for referral was low, despite a degree of prior screening, or alternatively, the threshold for diagnosis may have been high, but more probably it reflects the 43% of referrals made mainly on grounds of risk (60% of those given no diagnosis) as well as the multiple problems (social, marital, clinical) that might lead patients to complain of symptoms without fitting a clear diagnostic category. Ten patients were admitted to the Mother and Baby Unit during the 18 months, suggesting a rate of serious psychiatric disturbance (0.3%) comparable with that from other studies (Hemphill, 1952; Paffenbarger, 1964; Grundy & Roberts, 1975; Kendell *et al*, 1981). Of all those given a diagnosis at first interview, approximately one in seven was admitted. This ratio of 'serious' (i.e. admitted) to 'moderate' cases differs widely from the 1:75 ratio of rates of post-partum psychosis to post-natal depression. A combination of reasons may account for this. Firstly, some new cases of depression may arise in the puerperium after cessation of access to the liaison service via the obstetric unit itself. Referral of such cases from the community was unusual, so the total number of postnatal depression cases is likely to be an underestimate. Secondly, it is possible that many moderately ill patients were not referred; thus the referral threshold seems unlikely to have been low, and it cannot be concluded that referral was often unnecessary.

Figure 3 makes explicit another explanation of this ratio – the difficulty in following potential depressives into the post-natal period. Although in keeping with other reports on failure to attend (Baekeland & Lundwall, 1975; Cottrell *et al*, 1988), the drop-out rates following initial assessment and first interview are disturbingly high. There may be many reasons for this. Firstly, patients at risk but currently well may choose not to attend in the absence of a psychiatric problem. Secondly, there may be practical reasons which prevent a woman from attending once her baby is born, for example the breaking of the link with the antenatal clinic, or the difficulty of bringing a very young baby to hospital. Thirdly, depression may itself make the patient less inclined to attend for treatment, through lack of interest or pessimism about improvement. Fourthly, some patients may not want further psychiatric contact, because of either fears of social stigma or doubts about the effectiveness of any treatment or its desirability (e.g. the use of drugs while breast-feeding).

Whatever the reason, or the combination of reasons, the implications for the service are clear. There is little value in simply predicting risk or attempting to engage patients while they are attending another hospital unit. This must be supplemented by a community-orientated follow-up service that can overcome the high drop-out rate, and make available the support and treatment that many patients need but do not seek, or want but cannot reach.

## Further directions for the service

The components of an adequate obstetric liaison service are:

(a) management of all current psychiatric illness related to pregnancy, requiring an effective referral mechanism
(b) accurate prediction of individual risk, leading to efficient preventive management
(c) full liaison with the community services, allowing better post-natal follow-up
(d) ongoing research, including evaluation of the service
(e) closer teaching and research links with community-based practitioners
(f) development of liaison to other areas of obstetric and gynaecological practice
(g) adequate resources – multidisciplinary manpower, premises, and research.

Our service found the management of current disorder to be an inescapable practical priority. Nevertheless, the properly functioning service must include preventive management of those at risk, based on effective post-natal follow-up in the community. Having established better follow-up, the service must address a fundamental question: is it effective? Can early identification of risk make subsequent illness less likely or less severe, more readily detected or more easily and effectively treated? Accurate assessment of outcome would allow calculation of the predictive value of measurable risk factors, leading to the estimation of risk in individual cases.

The essence of effective post-natal management is community-based follow-up: the service therefore needs sufficient provision of community psychiatric nurses. Other community links, such as liaison with general practitioners, health visitors, and community midwives, as well as domiciliary visits by hospital-based staff, are similarly important elements of comprehensive obstetric liaison. It follows that the teaching and research function of the service must also include these community-based practitioners, as well as obstetric staff and other psychiatrists.

Such a service must address primarily the problem of post-partum and pregnancy disorders, but there are additional areas of obstetric practice in which psychiatric consultation is also requested. These include termination, and infertility and pregnancy failure clinics, where a more formal psychiatric role would be of likely benefit.

The King's College Hospital liaison began with only two sessions per week. Ultimately the successful service must have adequate resources – manpower, multidisciplinary liaison, clinical and research facilities. It is indisputable that the psychiatric complications of pregnancy are common, distressing and potentially serious, and it follows that a liaison service should be expanded in accordance with the magnitude of the problems it addresses. Only a properly resourced service can evaluate and improve its methods and management towards both efficient prediction of risk and more effective treatment.

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# Psychological Aspects of Hysterectomy

## A Prospective Study

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Sixty women aged between 30 and 56 years, having hysterectomy for benign conditions, were prospectively studied to investigate psychological adjustment to operation, and to explore social, psychological and physical factors associated with psychological outcome. A further 30 women were included for prospective research on psychological outcome. Investigations took place within two weeks of operation and after four months and 14 months. The findings indicated a high prevalence of pre-operative psychological morbidity (65%), which reduced to 31.7% afterwards. There was no evidence that hysterectomy led to a greater psychological distress. The principal risk factors of poor psychological outcome were the previous scores on the mental health measures and personality inventory. Involvement in the research process did not appear to affect psychological outcome.

There has been much debate in the professional and lay press about the high incidence of hysterectomy in many Western countries. Hysterectomy is the most frequently performed major operation in the US, where some 60% of women can expect to have a hysterectomy in their lifetime (Roeske, 1978). This compares with an estimated rate for Australian women of 40% (Selwood & Wood, 1978). The hysterectomy rate in the UK is considerably lower – approximately half that of the US (Kincey & McFarlane, 1984).

A major concern has been the long-reported association of hysterectomy with adverse psychological sequelae. Research findings have often appeared contradictory, perhaps reflecting the many inherent methodological problems. These include: prospective versus retrospective studies; types of assessment used for evaluating psychological status; whether the hysterectomy was accompanied by oöphorectomy; the indication for hysterectomy (benign or malignant lesions); sample size differences; methods of data collection; cultural factors which may influence perception of the uterus; and pathways to surgery in different countries. Early writers (Drellich & Bieber, 1958) emphasised the symbolic importance of the uterus to women's feminine self-concept. Several investigators reported that hysterectomy was associated with adverse psychological sequelae as evidenced by an increased incidence of psychiatric referral (Barker, 1968) and an increased frequency of treatment with antidepressants in a general-practice setting (Richards, 1973, 1974).

These earlier studies were retrospective. The adverse findings have not been confirmed by prospective studies, which have, however, highlighted a previously unrecognised strong association between pre-morbid psychological dysfunction and hysterectomy. The prospective studies of Martin *et al* (1977, 1980) and Gath *et al* (1982*a*,*b*) are of considerable interest. Both utilised structured psychiatric interviews and psychological rating scales pre- and post-operatively. Before operation, both studies reported similar and high prevalence of psychiatric illness (57% and 58% respectively). The type of diagnosis varied. In Martin *et al*'s study there was a 27% prevalence of Briquet's syndrome and a 30% prevalence of depression. In the studies of Gath *et al* (1982*a*), 62% of those with a psychiatric diagnosis were depressed and 31% suffered from anxiety symptoms.

Psychological outcome after hysterectomy also differed. Gath *et al* (1982*a*) in their UK study reported a diminution in psychiatric morbidity from 58% pre-operatively to 29% at 18-month follow-up. The US study of Martin *et al* (1977, 1980) did not demonstrate any reduction in psychiatric morbidity. At 12-month follow-up, 66% received a psychiatric diagnosis compared with 57% pre-operatively. It is unclear whether the differences in type of psychiatric diagnosis and outcome observed in these two studies reflect real differences between women in the US and the UK and their pathways to operation; the different criteria and rating scales utilised; or the possible effects of the investigators themselves on the outcome. Martin *et al*'s study was carried out by a male psychiatrist in a hospital setting, while Gath *et al* utilised female social workers and psychologists who visited the patients in their own homes.

The present study was designed to clarify some of these issues and incorporated some important methodological features of both studies. The Australian setting for the study combined features of both UK and US health care systems (free or public health care and private health care operate side by side). Its similarity in design and method to the Oxford study of Gath *et al*, which to date has been the most thorough investigation, makes direct comparison possible.

This study aimed (a) to determine the pre-operative and post-operative psychological morbidity in a group of women who underwent hysterectomy for benign conditions; (b) to investigate psychosocial and gynaecological factors associated with psychological outcome; and (c) to explore the effect of the prospective research process on psychological outcome.

## Method

### Patients

The criteria for sample selection were: aged between 30 and 55 years; English as the main language; having an on-going sexual relationship; and undergoing operation for benign conditions.

The 90 women taking part in the study were consecutively selected from gynaecological out-patient clinics in a large public hospital, and from the private practices of the several gynaecologists who agreed to allow their patients to participate. In order to determine the possible effects of the research process, the sample was randomly assigned to two groups; 60 to Group A who were studied prospectively (before and after hysterectomy) and 30 to Group B who were assessed retrospectively only, 14 months after hysterectomy.

### Procedure

Measures were taken at three points during the period of the study: Time 1 within the two weeks before surgery (Group A only); Time 2 four months after operation (Group A only) and Time 3 14 months after operation (Group A and B). The design is illustrated in Table I.

### *Standardised measures*

Personality traits were assessed with the Eysenck Personality Inventory (EPI) (Eysenck & Eysenck, 1964) and Bem Sex Role Inventory (BSRI) (Bem, 1974). These were administered at Time 1.

Mental status was assessed by the Present State Examination (PSE) in its shortened version (Wing *et al*, 1974).

Mood was also assessed subjectively using a questionnaire, the Profile of Mood States (POMS) (McNair *et al*, 1971).

Life events were monitored by the Life Events Inventory (LE) adapted from that of Tennant & Andrews (1976) at Times 1 and 3.

Pre-operative and post-operative medical reports were provided by the referring gynaecologist. The pre-operative report included information on the planned operative procedure, presenting symptoms, previous treatment, surgery and contraceptive procedure. Post-operative reports detailed pathological findings and hormone replacement therapy.

### *Interviews*

A semistructured interview was used at Time 1 and again at Time 3. At Time 1 information was obtained on the following: demographic data; developmental history; social support and functioning; perception of problems leading to operation; sexual adjustment; information, concerns and expectations regarding operation; and past and present medical psychiatric history, with special reference to Feighner's criteria (Feighner *et al*, 1972) for the presence of Briquet's syndrome. (Briquet's syndrome, also known as somatisation disorder, manifests itself as a chronic or recurrent illness beginning before the age of 30, mainly in women with a dramatic, vague or complicated medical history. The patient must report 25 medically unexplained symptoms for a definite diagnosis according to Feighner's criteria.) At Time 3 the interview concerned the following areas: a review of previous symptoms, current problems and subjective assessment of recovery; medical attendance and medication; the information made available about aspects of operation and information needs; current sexual adjustment; remaining concerns; and response to study.

### *Comparison with other studies*

There are many similarities in design and methodology between this and the Oxford study, although in this study

TABLE I
*Study design*

| | *Time 1*<br>*(2 weeks before surgery)*<br>*Interview and standardised measures* | *Surgery* | *Time 2*<br>*(4 months after surgery)*<br>*POMS only* | *Time 3*<br>*(14 months after surgery)*<br>*Interview and standardised measures* |
|---|---|---|---|---|
| Group A ($n=60^1$) | × | × | × | × |
| Group B ($n=30^1$) | — | × | — | × |

1. Randomly assigned.

the sample included both private and public hospital patients. As in the Oxford study, only women who had hysterectomy for benign conditions were admitted. The study utilises the PSE supported by POMS as principal measures of outcome and the EPI is also employed, but in contrast to the Oxford study the BSRI and the Life Events Inventory are included so as to explore further the role of sex role affirmation and the incidence of significant life events in relation to outcome. Like the Oxford study, the Melbourne one uses a female investigator (MMR), but not all subjects were visited in their own homes. A similar approach is used to data analysis.

This study resembles that of Martin *et al* (1980) only in its attention to the presence or absence of Briquet's syndrome through reference to Feighner's criteria.

## Results

### Prospective study results (Group A)

The following data refer to the 60 women in Group A and are relevant to the prospective study. All women who met the study criteria for inclusion joined the study and there were no losses from this sample at the 14-month assessment, giving a follow-up rate of 100%.

*Socio-demographic*

Fourteen subjects were public hospital patients, and 46 were referred from private practice.

Mean age was 40.1 years (s.d. 6.1 years). Before operation 57 women were married, and the remaining three women were living in *de facto* relationships. Following operation two women separated from their husbands but all other relationships remained intact. Median parity of the women was 2 (range 1-8). Two women reported primary infertility and two were nulliparous by choice. Before operation half the women were in full- or part-time employment, and all but two of them expressed high levels of work satisfaction. Socio-economic status, as measured by their partner's occupation, indicated that 68% of the women were from blue-collar and working-class groups, 32% being from professional or managerial classes.

*Gynaecological data*

*Pre-operative: (a) Reasons for surgery.* Most patients had multiple symptoms, but there was a predominance of menstrual-related reasons for the recommendation for surgery. Sixty-five per cent presented with painful periods, 82% excessive bleeding, 6% pre-invasive carcinoma and one with endometriosis.

*Pre-operative: (b) Duration of symptoms.* For most, the symptoms were of long duration (mean 42 months, s.d. 36 months). Seven women had no previous gynaecological hospital admission, but the remainder had a prior mean number of hospital stays of 7.5 (s.d. 2.8).

*Post-operative.* The gynaecologists' reports following surgery are summarised in Table II.

TABLE II
*Gynaecological reports following surgery*

| *Procedure* | *Number* | *Percentage* |
|---|---|---|
| Vaginal hysterectomy | 28 | 47 |
| Abdominal hysterectomy | 32 | 53 |
| Bilateral oöphorectomy | 4 | 7 |
| Left or right oöphorectomy | 5 | 8 |
| Hormone replacement therapy | 7 | 12 |
| *Pathology* | | |
| None | 25 | 42 |
| Endometriosis | 4 | 7 |
| Polyps – endometrial | 1 | 2 |
| Fibroids | 14 | 23 |
| Adenomyosis | 17 | 28 |
| Cervical pre-malignant disease | 5 | 8 |

At the 14-month interview the patients' subjective reports on their physical health and general well-being indicated that 81.7% were feeling much or somewhat better, 10% reported no change (four of these had not been particularly distressed by symptoms before surgery) and 8.3% were worse. Weight gain of at least 3.5 kg was reported by 43%.

*Psychological data*

*Personality inventories.* EPI scores for the sample indicated a mean neuroticism (N) score of 11.5 (s.d. 6.4) and extraversion (E) 11.0 (s.d. 4.4). The BSRI mean score for femininity was 5.64 (s.d. 0.65) and masculinity 4.58 (s.d. 1.04). Classification according to the median split method showed 24 of the sample as androgynous, one masculine, 19 feminine and 16 undifferentiated.

*Mental status.* Two indices of morbidity available from the PSE score, the Index of Definition (ID) and diagnostic categories, were considered. The ID score gives eight levels of disorder. At level 5 and above, subjects have sufficiently numerous and severe symptoms to be given a definite psychiatric diagnosis or to be referred to as a 'psychiatric case'. Table III summarises the pre- and post-operative results. The change in ID scores indicates a significant reduction in morbidity ($t = 6.06$, d.f. 59, $P < 0.001$). This is also apparent in the decrease in the number of women who could be described as 'psychiatric cases', 19 post-operatively (32%) as compared with 33 pre-operatively (55%) ($\chi = 7.93$, d.f. 1, $P < 0.01$). Both before and after surgery, the major diagnostic category was depression.

Figure 1 details the changes in levels of 'psychiatric caseness'. More than half the women described as 'psychiatric cases' beforehand had improved at Time 3 and would be categorised as 'non-cases'. There were only three women with an ID level less than 5 at Time 1 who deteriorated to the extent that they could be described as 'psychiatric cases' at Time 3. Each of these women had experienced quite devastating life events in the intervening period, and they attributed their current depressed state to these events.

TABLE III
*Pre-operative and post-operative results summarised and compared*

| | *Before surgery* | | *After surgery* | |
|---|---|---|---|---|
| *PSE assessment score* | | | | |
| Total score: mean (s.d.) | 12.45 | (9.10) | 6.41 | (6.09) |
| ID score: mean (s.d.) | 4.33 | (1.42) | 3.10 | (1.69) |
| *'Caseness'* | | | | |
| Subjects with ID>4 | 27 | (45%) | 41 | (68%) |
| Subjects with ID>5 | 33 | (55%) | 19 | (32%) |
| *Diagnostic category* | | | | |
| Neurotic depression | 17 | (52%[1]) | 11 | (58%[1]) |
| Retarded depression | 3 | (9.1%[1]) | 4 | (21%[1]) |
| Anxiety states | 12 | (36%[1]) | 4 | (21%[1]) |

1. Percentage of classified cases.

A further analysis of the ID score was made by recording change in the ID level between Time 1 and Time 3. This indicated that only 6 subjects had higher scores at Time 3 than previously, 14 did not change, and 40 subjects improved.

*Briquet's syndrome.* Only one woman received a diagnosis of Briquet's syndrome. She had had 13 previous hospital admissions, six being for gynaecological reasons. Some improvement in gynaecological symptoms was noted at Time 3, when numerous new symptoms of a different focus were reported.

*Profile of moods.* Results of the POMS questionnaire administered at all three stages of the research appear in Table IV and indicate significant differences in the POMS total score between Time 1 and Time 3 ($t=2.32$, d.f. 59, $P<0.05$). No significant overall change in the total score occurred between Time 2 and Time 3: at four months the women appear to have achieved an improved level of mood which they maintained at 14 months. There was a high correlation between POMS total scores and the ID scores at both Time 1 ($r=0.68$, $P<0.001$) and Time 3 ($r=0.73$, $P<0.001$).

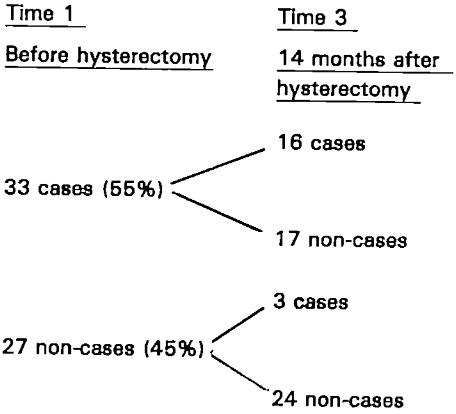

FIG. 1 Changes in caseness.

*Factors associated with psychological outcome as measured by PSE ID*

*Social factors.* There was no association between the outcome variables of the PSE ID score, of caseness or the POMS total score and the variables of age, social class, employment, or parity. There was a low, but significant, correlation between education level and the PSE ID ($r=0.34$, $P<0.01$).

*Psychological factors.* Pre-operative factors associated with post-operative variables were as follows.

*PSE ID.* The pre-operative PSE ID was significantly associated with post-operative PSE ID ($r=0.54$, $P<0.001$).

*Profile of moods.* The pre-operative total score on the POMS was significantly associated with post-operative score ($r=0.48$, $P<0.001$), as were scores on five of the subscales: tension ($r=0.56$, $P<0.001$), depression ($r=0.42$, $P<0.001$), anger ($r=0.31$, $P<0.017$), fatigue ($r=0.43$, $P<0.001$), and confusion ($r=0.37$, $P<0.01$).

*EPI neuroticism scale (N).* There was a moderate correlation between the PSE ID and the N score ($r=0.48$, $P<0.001$). The mean N score for those subjects who were cases post-operatively was significantly higher than that for the non-cases ($T=2.84$, d.f. 59, $P<0.01$).

TABLE IV
*POMS raw scores at times 1, 2, and 3*

| *POMS scale* | *Time 1* | | *Time 2* | | *Time 3* | |
|---|---|---|---|---|---|---|
| | *Mean* | *s.d.* | *Mean* | *s.d* | *Mean* | *s.d.* |
| Tension | 14.5 | 9.5 | 9.8 | 8.6 | 11.0 | 8.9 |
| Depression | 10.4 | 11.9 | 8.6 | 12.2 | 8.9 | 11.0 |
| Anger | 8.9 | 8.1 | 8.1 | 9.6 | 8.4 | 9.0 |
| Vigour | 13.2 | 7.5 | 15.9 | 7.1 | 16.5 | 7.7 |
| Fatigue | 12.5 | 8.5 | 8.0 | 7.0 | 8.0 | 7.8 |
| Confusion | 7.7 | 6.3 | 6.5 | 8.4 | 6.2 | 4.9 |

TABLE V
*Stepwise multiple regression with post-operative PSE ID as dependent variable*

| *Variable* | *Significance* | $R^2$ | $F$ | *Significance* |
|---|---|---|---|---|
| PSE ID (Time 1) | 0.000 | 0.29 | 24.02 | 0.000 |
| Neuroticism | 0.033 | 0.35 | 15.18 | 0.000 |
| Masculinity | 0.053 | −0.39 | 11.94 | 0.000 |
| Past psychiatric history | 0.041 | 0.43 | 10.60 | 0.000 |

*Psychiatric history.* A history of having previously been treated for depression or 'nerves' was significantly related to the post-operative PSE ID scores, with those with a history of treatment having greater scores than those without such a history ($t=3.14$, d.f. 59, $P<0.01$).

*Bem Sex Role Inventory.* There was no significant association between the femininity score and any of the outcome scores, but the masculinity score showed a moderate negative relationship with the PSE ID score following hysterectomy ($r=0.44$, $P<0.001$). The mean masculinity score for those subjects who were cases at Time 3 was significantly lower than the mean for those who were not ($t=3.68$, d.f. 59, $P<0.001$).

*Life events.* The LE scale (scored in accordance with the Paykel concept of the amount of distress caused by life events) yielded a mean of 49.7, s.d. 35.5. The scale had a low positive correlation with the PSE ID score ($r=0.36$, $P<0.01$) and there was a moderate correlation with POMS total score ($r=0.44$, $P<0.001$).

*Gynaecological factors.* There was no association between the post-operative ID and the following factors: absence of pathology; vaginal v. abdominal approach; hormone replacement therapy; bilateral oöphorectomy.

*Multivariate analyses.* Multiple regression using a stepwise solution was performed with the PSE ID at Time 3 as the dependent variable. Independent variables available pre-operatively which were entered into the analysis were as follows: pre-operative PSE ID; educational level; neuroticism score; masculinity; history of previous psychiatric treatment; and sexual adjustment. Four variables accounted for 43% of the variance in the PSE ID ($R^2=43.54$, $F=10.60$, $P<0.001$). These results are summarised in Table V. The pre-operative ID was the most powerful predictor, followed by the neuroticism score, masculinity, and previous history of treatment for psychiatric symptoms.

### Groups A and B

#### *Possible effects of the research process on outcome*

The 90 women of groups A and B are included in the following analysis. Although there was random assignment to the groups, it was considered necessary to test for the equivalence of the groups prior to surgery because of the small number involved. $T$ tests on continuous and interval variables and $\chi^2$ tests on nominal variables showed no significant difference between the groups except on the variable age ($t=2.52$, d.f. 59, $P<0.05$). As age may have been a confounding variable, correlation coefficients wer calculated between age and the PSE ID, giving a lo correlation of 0.14. Because of this correlation between ag and PSE ID, an analysis of covariance was performed f the groups. Age was entered in analyses as a covariate an PSE ID as the dependent variable. Results indicated tha after controlling for the effects of age, there was n significant main effect between the mean scores of th groups in relation to the PSE ID. These results indicate tha membership of Group A, which implied being involved i the research process through all three phases of the study appears not to have affected psychological outcome.

## Discussion

The results indicate a clear reduction in the disablin symptoms that lead to operation. The improvemen in general well-being was similar to that reported b Gath *et al* (1982*b*), where 18 months after surger 84% reported their general health as being better 11% unchanged and 5% worse.

### Psychological morbidity

The prevalence of psychiatric morbidity befor surgery was also markedly similar to that describe by Gath *et al* (1982*a*) and Martin *et al* (1977). It wa considerably higher than would be expected in normal population sample. The Camberwell community study in which the PSE measure was used (Bebbington *et al*, 1981) found a prevalence o 'psychiatric caseness' in all women of 15.1%. Henderson *et al* (1981) give a prevalence o psychiatric disorder in an Australian sample as 15% in women.

The prevalence of Briquet's syndrome was low in comparison with that found by Martin *et al* (1980), although similar to the expected rate in a normal population sample (American Psychiatric Association, 1980). As might be expected, this prevalence did not change following surgery.

The question arises as to whether the high prevalence of morbidity beforehand reflects the response of subjects to the impending operation. To answer the question adequately, a different design using a very much larger sample over a much longer period would have been necessary. However, the PSE investigates mental health status over the four weeks prior to the point at which it is administered. Consequently we can conclude with accuracy that the finding of 55% morbidity was valid for at least six weeks prior to surgery. In addition, the interview sought to establish whether the symptoms observed were merely a manifestation of pre-operative anxiety. In almost every case the women linked their psychological symptoms with physical symptoms as their motivation for accepting operation. Based on their recollection, the mean duration of symptoms before operation ranged from three months to eight years, the mean being 42 months. There was a significant decrease in morbidity following operation, again in a proportion similar to that described by Gath *et al* (1982*a*). There are no comparative data on a normal sample which measures change in the PSE over time: nevertheless, the changes that took place within this sample seem to be beyond that magnitude expected with time alone.

The POMS results indicate that there was a significant improvement at four months following operation and that this was maintained. Similarly, the Oxford study found an improvement at six months which was still evident at an 18-month follow-up: it would seem that recovery had taken place at four months and that the longer follow-up was unnecessary. The post-operative results indicate that there was a minimal risk for those subjects who were not 'psychiatric cases' beforehand to become 'cases'; only three women deteriorated to the level of 'caseness', and almost half of those who were 'cases' beforehand improved. The number of three new 'cases' is too small for statistical analysis, but it is worthwhile noting that for all three women significant life events occurred which they related to their current depressive mood. While these results appear very encouraging, the finding of the high level of psychiatric morbidity beforehand, reducing significantly but to a point that was still much higher than would be found in a normal population, gives cause for concern.

The results from many of the retrospective studies reporting high prevalence of depression following hysterectomy are in all probability not greatly different from the findings of this study. For example, Munday & Cox (1967) quote 33% as being emotionally disturbed following hysterectomy, Richards (1973) 36%. Their mistake was to assume that hysterectomy was the causative factor. The research of Ballinger (1975, 1977) and of Byrne (1984) was indicative of a high prevalence of psychiatric morbidity in gynaecological clinic samples generally: 53%, 29% and 46% respectively.

The post-operative results, like the pre-operative ones, are remarkably similar to those of Gath *et al* (1982*a*), but differ from those of Martin *et al* (1980), which showed very little change, possibly due to the high incidence of Briquet's syndrome in that sample.

### Risk factors

In view of previous findings, it is not surprising that the pre-operative measures of mental status and mood were significantly associated with psychological outcome following hysterectomy. A previous history of treatment for psychiatric symptoms was associated with outcome. In contrast with the findings of Martin *et al* (1980), the prevalence of Briquet's syndrome was low, approximately at the level that would be expected in a normal population sample. This may indicate a more careful selection procedure by gynaecologists in the present study. Neuroticism was also significantly related to outcome. Gath (1982*b*) suggests that a woman with a predisposed personality may experience considerable emotional distress when faced with prolonged menorrhagia, and that personality disposition, plus the menorrhagia, may be an important determining factor in the referral for operation. Interpretation of this statement and the present analysis are difficult. It is possible that the stressed personality, as reflected in raised neuroticism scores, may be associated with the disturbances of the hypothalmic–pituitary–ovarian axis and menorrhagia, the most frequent reason for hysterectomy in the present study. Alternatively, the problem could lie in perception. The maladapted personality, with high psychological morbidity, may perceive menstrual cycle symptoms more negatively than the well-adjusted woman. There is evidence that reports of blood loss in particular bear little relationship to objective assessment when actual blood loss is measured (Fraser, 1981).

The finding that a low masculinity score was associated with higher levels of mental status disturbance, and that the categorisation of androgyny was associated with 'non-caseness', partially supports previous research relating to sex role adaptation (Bem, 1975). The finding of no significant correlation between the femininity score and outcome does not support the contention that adherence to a highly stereotyped feminine sex role is maladaptive, and more specifically it does not support the notion that the very feminine woman will perceive hysterectomy and the accompanying loss as a blow to self-esteem. It would appear that it is the lack of endorsement of masculine traits, rather than the whole-hearted endorsement of feminine traits, that is important. Those subjects whose self-concept indicated that they regarded themselves as being low on instrumental traits, and who were unassertive and dependent, were most at risk.

The presence or absence of pathology did not predict outcome – a result in agreement with that of Gath *et al* (1982*b*), but at odds with the findings of Richards (1973) and with the commonly held belief that the subject in whom no pathology is found is likely to have a poor outcome.

### Effect of the research process

The question as to whether the research process itself affects outcome is of importance in research that seeks to observe change over time. For example, an alternative explanation for the results of Gath *et al* (1982*a,b*) may have been that improved outcome reflected the concern and interest shown by researchers who saw their subjects in their own homes. The results of the present study indicated no differences between the two groups when psychological outcome was considered, so in this case the possible alternative explanation does not hold.

## Conclusion

This study confirms the high incidence of psychological morbidity present in women who are about to undergo hysterectomy and supports the findings of Gath *et al* (1982*a,b*). The operation itself does not seem to precipitate adverse psychological sequelae: in fact, the level of symptomatology decreased in over half the women post-operatively. Post-operative outcome clearly reflects pre-operative psychological adjustment. Further research is needed on the pathways to operation. In particular, the possible association between psychological morbidity and disturbances of the hypothalamic–pituitary–ovarian axis deserve attention.

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# The Course of Tardive Dyskinesia in Patients on Long-Term Neuroleptics

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Results are presented of five consecutive annual examinations using the Abnormal Involuntary Movement Scale for 101 community-based chronic psychiatric patients. These 101 patients had a history of longer and more consistent neuroleptic treatment than the 231 patients who initially entered the study, so no conclusions about prevalence of TD can be drawn. At each examination two-thirds of this group showed signs of TD; however, only 45% were TD positive at most examinations and 24% were best described as having fluctuating TD status. Of those patients who were consistently TD positive, 82% showed no overall significant change in summed AIMS scores, 11% improved and 7% became worse.

In order to assess adequately the likely risks and benefits of maintenance neuroleptic medication, it is necessary to elucidate the natural history of tardive dyskinesia (TD) in patients continuing neuroleptic medication. As Gardos *et al* (1983) suggest, this information is best obtained from longitudinal studies with repeated measures of TD.

In 1981 we commenced annual examinations using the Abnormal Involuntary Movement Scale (AIMS; Guy, 1976) in neuroleptic-exposed patients receiving mental health care at four community health clinics. The aim of the study was to describe the course, during routine clinical care, of any abnormal involuntary movements. The study started with 231 patients and in this paper we report the results for those 101 patients who completed five consecutive annual AIMS examinations.

## Method

The study was conducted without interference to the patients' routine care. If possible, examinations were undertaken when neuroleptic medication had been stable for the preceding ten weeks, and toward the end of the injection interval for patients receiving fluphenazine decanoate.

There were three rating teams, with the research psychiatrist (J.B.) rating with one of two other psychiatrists or with a community nurse. After completion of the standard examination, the first eight items of the AIMS were scored. The first seven items are for ratings of highest observed severity of abnormal involuntary movements in different body areas. Scores of 0–4 are for absent; minimal, may be extreme normal; mild; moderate; and severe respectively. Body areas are face, lips and perioral area, jaw, tongue, upper limbs, lower limbs, and trunk. The instructions for using the scale state that the score should be reduced by 1 when the highest observed severity occurred only during specified 'activated' parts of the examination. We did not observe this rule if the observance removed the only score of 2 or more on the first seven items. Item 8 is for a global rating of TD.

Patients were rated by the same rating team at each examination except for a group of 18 patients rated by J.B.–P.J. for the first three years then by J.B.–J.A.C. Correlation coefficients of between-rater agreement on the sum of scores on AIMS items 1–7 each year from 1981 to 1985 were as follows:

| | | | | | |
|---|---|---|---|---|---|
| J.B.–J.A.C. | 0.91 | 0.91 | 0.87 | 0.92 | 0.91 |
| J.B.–K.K. | 0.97 | 0.89 | 0.92 | 0.92 | 0.98 |
| J.B.–P.J. | 0.95 | 0.87 | 0.84 | — | — |

After completion of each examination, current medication was recorded and the medication history was updated from the time of the last examination.

The data were analysed using statistical procedures as implemented in Minitab (version 2–0) (Ryan *et al*, 1976) or BMDP Statistical Software (Dixon, 1983). Continuous variables were assessed using standard normal-based procedures (analysis of variance or regression). Discrete variables were analysed using chi-squared methods.

### Patients

At the commencement of the study a census was taken of all current attenders at four inner-metropolitan community health centres who had a documented history of neuroleptic exposure and were under the care of the mental health teams. Approximately 95% of these (total 231) entered the study in 1981. However, 89 had missed consecutive examinations by 1983, and a further 41 by 1985. Descriptive data on the 101 patients who completed five consecutive annual examinations is given in Table I. Eighty-one per cent were suffering from schizophrenia and a further 9% from schizoaffective illness. These 101 patients differed significantly from those lost to the study with respect to several important variables. Patients lost early in the study were younger than those examined on at least three consecutive occasions (mean age of the 89 patients lost by 1983 was 43.9 (s.d. 14.7) years, $P = 0.03$) and they had spent fewer years in hospital (1.8 (s.d. 3.3) years, $P = 0.02$). Patients lost to the study also had had fewer total years

TABLE I
*Descriptive data on 101 patients (at baseline in 1981)*

| | | |
|---|---|---|
| *Gender* | | |
| Male | 53 | (52%) |
| Female | 48 | (48%) |
| *Mean age: years* | | |
| Males | 46.0 | (s.d. 10.1) |
| Females | 51.0 | (s.d. 12.4) |
| All patients | 48.4 | (s.d. 11.5) |
| *Diagnosis* | | |
| Schizophrenia alone | 66 | (65%) |
| Schizophrenia with mental retardation | 7 | (7%) |
| Schizophrenia with alcohol dependence | 7 | (7%) |
| Probable schizophrenia | 2 | (2%) |
| Schizoaffective psychosis | 9 | (9%) |
| Manic-depressive psychosis | 7 | (7%) |
| Other diagnosis | 3 | (3%) |
| *Dental state* | | |
| Patients with own teeth (with or without partial denture) | 45 | (45%) |
| Patients with at least half their teeth missing (with or without dentures) | 56 | (55%) |
| *Past treatment* | | |
| Number of patients admitted to hospital | 97 | (96%) |
| For patients admitted to hospital: | | |
| mean number of years (total) spent in hospital | 4.6 | (s.d. 7.0) |
| mean number of years since last stay in hospital | 5.8 | (s.d. 5.9) |
| Mean age (years) at first neuroleptic treatment | 33.9 | (s.d. 10.6) |
| Mean number of years (total) of neuroleptic treatment | 11.4 | (s.d. 6.7) |

of neuroleptic treatment than the 101 patients who remained (mean for 41 patients lost between 1983 and 1985 was 8.8 (s.d. 7.3) years, mean for 89 patients lost by 1983 was 8.5 (s.d. 6.3) years, $P=0.003$). This bias precludes any meaningful determination of prevalence rates. However, it is worth noting that the area served by the four community centres has lower socio-economic status (income, education and occupation) than for the general population of Sydney and has the highest rate of psychiatric admissions for the state of New South Wales.

### Treatment during the study

At baseline the average total daily dose in chlorpromazine equivalents (CPZE; Mason & Granacher, 1980) for the 93 patients who were receiving neuroleptic treatment was 300 (s.d. 248) mg. For the 60 patients receiving fluphenazine decanoate injections (with or without oral neuroleptic), the average dose, calculated as a weekly dosage, was 11.8 (s.d. 8.4) mg. Twenty per cent of the cohort were receiving a high-potency oral neuroleptic and 38% a low-potency oral neuroleptic. Other psychotropic medications were anticholinergics 38%, tricyclic antidepressants 6%, lithium 7%, and benzodiazepines 7%. These 101 patients did no differ from the 231 with regard to treatment at baseline In Table II we give details of treatment during the study A repeated measures analysis of neuroleptic dosage at each examination showed no statistically significant changes in drug regime over time. The only differences are in length of follow-up interval.

## Results

### Group results

The proportion of patients showing TD at each examination was calculated using Schooler & Kane's (1982) criterion of one item score of 3 or two of 2 on the first seven items of the AIMS. Results are given in Table III. The sharp increase in TD positive from 1981 to 1982 is statistically significant ($P=0.03$). A sharp increase from 1981 to 1982 also dominated the picture when we extracted other measures from the AIMS score. The criterion score for each examination is the highest item score on AIMS items 1-7 averaged over the two examiners. From 1982 to 1985 the average proportion of patients meeting AIMS criterion 2.0 was 93%; for 3.0 it was 30% and for 4.0 it was 2%. The mean values for the sum of scores on AIMS items 1-7 for the 101 patients at each examination were obtained by averaging the ratings of the two examiners. For 1981, 1982, 1983, 1984 and 1985 these were 5.96 (s.d. 4.29), 7.77 (s.d. 3.95), 7.72 (s.d. 4.15), 8.44 (s.d. 3.98) and 7.35 (s.d. 3.75). Baseline values for the sum of scores on AIMS items 1-7 tended to be lower in patients lost to the study (for the 89 patients lost by 1983, 4.58 (s.d. 3.7); for the 41 patients lost between 1983 and 1985, 5.27 (s.d. 4.2), $F=2.73$, d.f. 2,228, $P=0.07$).

### Results for individual patients

In Fig. 1, the outcome in terms of TD status is traced for each patient. For TD positive, both raters were required to have given a minimum of two item scores of 2 or one of 3. The patient is otherwise considered TD negative at that examination. It can be seen that a substantial proportion of the cohort had a change in TD status each year (number changed 1981-82 32; 1982-83 27; 1983-84 19; 1984-85 26).

When considering consecutive pairs of examinations there are four possible outcomes for TD status: negative to negative; negative to positive; positive to negative; and positive to positive. In Table IV the proportions making each transition are given. (These have been calculated from data in Fig. 1.) Note the stability in the proportion of patients having each outcome across each study interval. The proportion of patients whose index and follow-up examinations are TD negative is consistently lower than the proportion of patients whose index and follow-up examinations are TD positive.

It can be seen from Fig. 1 that only 13 patients (13%) were assessed as TD negative at every examination. A further seven patients were negative at the first examination and at three of the four follow-up examinations. Thus 20% can

TABLE II

*Treatment during the study*

| | *1981 examination* | *1982 examination* | *1983 examination* | *1984 examination* | *1985 examination* |
|---|---|---|---|---|---|
| Patients not on neuroleptic | 8 (8%) | 13 (13%) | 9 (9%) | 10 (10%) | 8 (8%) |
| Mean total dose of neuroleptic chloropromazine equivalents[1] | 277 (s.d. 252) | 265 (s.d. 261) | 292 (s.d. 313) | 311 (s.d. 391) | 334 (s.d. 562) |
| Mean dose of fluphenazine decanoate: mg/week[1] | 7.0 (s.d. 8.7) | 7.8 (s.d. 10.2) | 7.3 (s.d. 10.6) | 8.1 (s.d. 13.7) | 7.4 (s.d. 10.0) |
| Patients receving anticholinergics | 38 (38%) | 39 (39%) | 44 (44%) | 40 (40%) | 37 (37%) |

| | *Interval 1981–1982* | *Interval 1982–1983* | *Interval 1983–1984* | *Interval 1984–1985* |
|---|---|---|---|---|
| Mean length of interval: days | 341 (s.d. 38) | 482 (s.d. 66) | 326 (s.d. 106) | 358 (s.d. 66) |
| Patients in hospital in interval | 14 | 18 | 15 | 15 |
| Patients whose medication was changed during the interval: | | | | |
| no change | 55 | 52 | 54 | 60 |
| one change | 24 | 29 | 34 | 21 |
| two changes | 16 | 14 | 12 | 13 |
| three or more changes | 6 | 6 | 1 | 7 |

[1] In this table dose levels are calculated as the mean for all 101 patients. (Mean doses for those patients actually receiving the neuroleptic are given in the text.)

TABLE III

*Occurrence of TD using Schooler & Kane's diagnostic criterion*

| | *1981 (%)* | *1982 (%)* | *1983 (%)* | *1984 (%)* | *1985 (%)* |
|---|---|---|---|---|---|
| Examiners agree TD −ve | 41 | 21 | 20 | 17 | 21 |
| TD rated+ve by J.B., −ve by other examiner | 3 | 10 | 13 | 7 | 7 |
| Examiners agree TD +ve | 52 | 64 | 65 | 72 | 64 |
| TD rated−ve by J.B., +ve by other examiner | 4 | 5 | 2 | 4 | 8 |

be considered mostly TD negative. There were 34 patients who were positive at all five examinations and a further 11 were positive at the first and three of the subsequent examinations, giving a total of 45% mostly TD positive. There were 11 patients who were TD negative in 1981 and had TD positive results in at least 1983, 1984 and 1985; thus at the end of the study they could be judged as having developed TD. In contrast, only one patient had TD disappear. The remaining 24 patients (24%) showed a fluctuating course in the four years of follow-up.

For each subject, the annual changes in the sum of scores on AIMS items 1-7 (average of two examiners results) were examined. A clinically significant change was recorded only if the difference between scores exceeded four points (in order to exceed rater variability; Bergen *et al*, 1984). A high level of unstable change was again apparent. The number of patients showing a change was 23 for 1981-82, 15 for 1982–83, 18 for 1983–84 and 13 for 1984–85. When 1981 and 1985 scores were compared, only 21 patients showed a significant change. It is important to note that no patient showed clinically significant worsening, or clinically significant improvement, in each of two consecutive examination intervals.

For the 45 patients mostly judged TD positive by both raters, the 1981 and 1985 values of the sum of scores on AIMS items 1-7 were compared: 37 patients (82%) showed no clinically significant difference, 3 (7%) were worse and 5 (11%) showed improvement.

## Discussion

The most important finding was the high level of unstable change in signs of TD. We have used

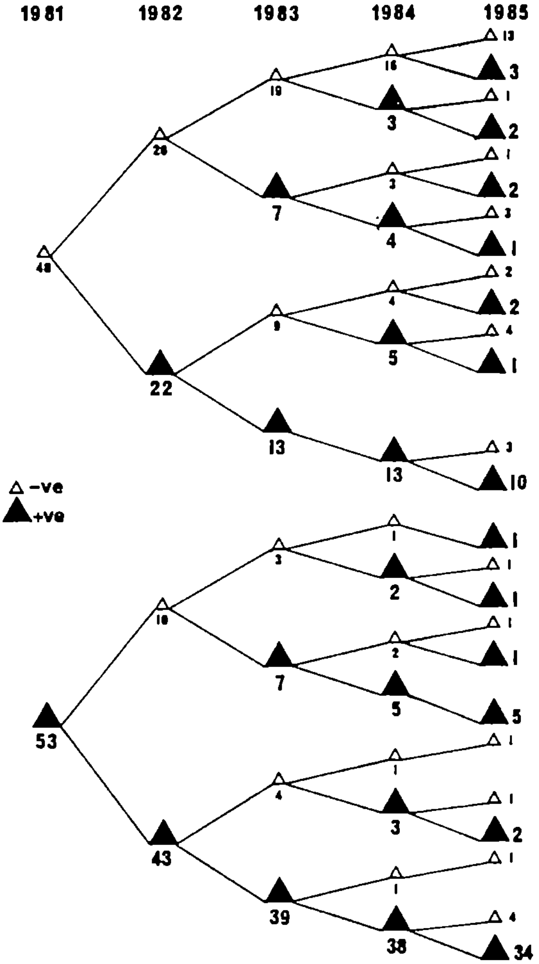

Fig. 1 Change in TD status for 101 patients.

Table IV
*TD status, and outcome at next examination*

| | *1981* | *1982* | *1983* | *1984* |
|---|---|---|---|---|
| Patients with TD status negative | 48 | 36 | 35 | 28 |
| Proportion negative at next examination | 0.54 | 0.61 | 0.63 | 0.68 |
| Proportion positive at next examination | 0.46 | 0.39 | 0.37 | 0.32 |
| Patients with TD status positive | 53 | 65 | 66 | 73 |
| Proportion negative at next examination | 0.19 | 0.20 | 0.09 | 0.23 |
| Proportion positive at next examination | 0.81 | 0.80 | 0.91 | 0.77 |

Schooler & Kane's (1982) AIMS diagnostic criterion and find that for a quarter of our patients TD status is best described as fluctuating. Other authors (Barron & McCreadie, 1983; Barnes *et al*, 1983; Gardos *et al*, 1985) have reported that a substantial proportion of patients (27%, 36%, and 35% respectively) show a change in TD status in studies based on two examination points 1–3 years apart. Our study, with multiple examination points, suggests that such change frequently does not represent TD appearing or disappearing in any permanent way, but rather a state of fluctuation.

The second important finding was that the proportions of patients who remain TD negative or TD positive at consecutive examinations are relatively stable across all study intervals. If these proportions were truly stable at 0.6 and 0.8, with the proportion remaining positive exceeding the proportion remaining negative, then an equilibrium would be reached at a point prevalence of TD of 66.6%. Moreover, the increase in TD from 1981 to 1982 would be consistent with these stable rates of change. It is thus possible that the level of TD in this group of patients has really been stable for the full four years at a point prevalence about 66.6% and that the increase from 1981 to 1982 was an artefact of sampling (i.e. in sampling a population which contains a substantial number of patients whose real TD status is fluctuating, we selected a disproportionate number in the negative state, and their change to positive in the following year has resulted in an apparent marked rise in point prevalence of TD). However, as Gardos *et al* (1985) noticed a similar increase then plateau in a subset of their patients followed up at three and five years, there may well be another explanation for this effect.

We found no change in neuroleptic medication that could have accounted for this shift in TD prevalence from 1981 to 1982. Nor was there a concomitant change in Parkinsonism. After analysis of the first three years of results, we had believed that upward rater drift might have contributed to the increase in proportion of patients recording TD. We now doubt this. If such were the case we would expect that as well as the rate of change from TD negative to TD positive being slightly higher from 1981 to 1982 than in subsequent years, the rate of change from positive to negative would be lower. The latter is not the case.

A number of follow-up studies during essentially routine clinical care spanning two-, three- and five-year intervals have now been published (Seeman, 1981; Smith *et al*, 1981; Barnes *et al*, 1983; Gardos *et al*, 1983, 1985; Casey & Toenniessen, 1983; Kane *et al*, 1984; Yassa *et al*, 1984). The results of this study, expressed as net change for individuals, or change within the whole group, are consistent with a consensus that is emerging, namely that the rate of change in TD in chronic populations is very slow.

The proportion of patients showing TD in this study was high. As noted, our total cohort was drawn from an inner-metropolitan area that shows higher psychiatric morbidity and lower socio-economic status than the general population. Moreover, the 101 patients reported in this study were older and had a history of more time in hospital and longer total neuroleptic exposure than patients lost to the study. They also tended to have had higher baseline AIMS scores. It is not surprising that the 101 patients with a history of longer and more consistent treatment were the ones who met the requirement of having attended for five consecutive annual examinations. Chouinard *et al* (1986) found similar differences between those of his patients who were available for follow-up five years after the baseline examination and those who were not.

We have noted our application of the 'deduct 1' rule in the method. This would clearly inflate the rate we report for AIMS criterion 2.0. Moreover, in retrospect we consider that we were generally very sensitive in the allocation of item scores of 2. This sensitivity to abnormality would increase our reported rate of TD and the magnitude of AIMS summed scores. The need to secure agreement in severity ratings across centres and over time has long been recognised (Kane & Schooler, 1980).

An average neuroleptic dosage of 300 mg CPZE daily appears unremarkable in terms of the existing literature on the course of TD. For example, Chouinard *et al* (1986) report a mean dose of 487 mg CPZE in their follow-up cohort of 169 patients, while the group studied by Gardos *et al* (1985) was receiving mean doses of 520 mg CPZE daily at baseline and 565 mg CPZE at follow-up. Yassa *et al* (1984) found a non-significant difference in mean daily doses for their group who improved (653 mg CPZE) and those who worsened (352 mg). Barnes *et al* (1983) describe low, medium and high dose bands, with high being ⩾500 mg CPZE daily. Twenty-five per cent of the 99 patients were in the highest dose band at baseline and 33% at follow-up. However, Jeste *et al* (1983) draw attention to the results of cross-cultural studies in which lower prevalences of TD were found in Bombay (Doonagi *et al*, 1982) and Hungary (Gardos *et al*, 1980), where neuroleptics are prescribed in lower dosage than in USA. Thus it may be that the doses of neuroleptic used in the patients surveyed in this study were contributing to the relatively high rate of TD. Recently efforts have been made to explore whether effective maintenance in schizophrenia can be achieved with lower dosage, because of this concern (Kane *et al*, 1983; Marder *et al*, 1987).

We attempted to monitor and correct for the possibility of rater drift over time by making repeated ratings of 22 video-recorded examinations during the course of this study. This video monitoring of rater reliability had limited application but did provide valuable data on rater variability (measurement error), which was taken into account in designing the analysis. Other threats to the internal validity of such a study are well recognised but deserve mention: the numerous uncontrolled and even unrecognised variables impinging on the patient between examinations (including variable compliance with medication); the effects on serial test results of the patient's increasing familiarity with the examination procedure; and the effects on the patient's presentation of such factors as anxiety and recent alcohol ingestion.

Because a number of our patients showed fluctuating TD status we propose that TD may evolve through a stage of fluctuating TD status to a stage of consistent positive TD. We have used this model to investigate factors influencing the course of TD and this will be the subject of a separate paper.

## Conclusions

(a) When group results are considered, little change in rate or severity of TD was observable in this population in the four years of the study. (b) There is a high level of fluctuation in TD status in individual patients. (c) Patients consistently judged TD positive show little overall change in summed AIMS scores in four years. (d) The rate of emergence of consistent TD positive status is low, but clearly much higher than the rate of disappearance of TD.

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# Comparative Assessment of Efficacy and Withdrawal Symptoms After 6 and 12 Weeks' Treatment with Diazepam or Buspirone

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Fifty-one out-patients presenting with generalised anxiety disorder were included in a double-blind trial, and treated with either buspirone (a new non-benzodiazepine antianxiety drug) or diazepam over 6 or 12 weeks, after which they were abruptly withdrawn and continued on placebo to 14 weeks. Ratings of anxiety and other symptoms were administered fortnightly and additional withdrawal symptoms noted. Forty patients completed the study; 8 of the 11 drop-outs were taking buspirone. Both drugs reduced anxiety, diazepam more rapidly, but with greater withdrawal symptoms, particularly after 6 weeks. Regular treatment with diazepam for 6 weeks leads to a significant risk of pharmacological dependence that is not present with buspirone.

There is now abundant evidence that benzodiazepines are prone to lead to pharmacological dependence and that care should be taken in their prescription for anxiety and insomnia. Dependency is shown mainly in the form of withdrawal symptoms, which include increased anxiety, panic and autonomic symptoms, perceptual distortion, depersonalisation, hypersensitivity to all sensory stimuli, dysphoria and depression, and, more rarely, paranoid symptoms, hallucinations, and epileptic seizures (Rifkin *et al*, 1976; Pevnick *et al*, 1978; Winokur *et al*, 1980; Petursson & Lader, 1981; Tyrer *et al*, 1981, 1983; Busto *et al*, 1986). Because the risk of pharmacological dependence with tranquillisers is great, any new antianxiety compounds must be assumed to carry the risk of dependence until proved otherwise. Buspirone is a new compound with good evidence of efficacy in treating anxiety (Feighner *et al*, 1982; Rickels *et al*, 1982; Schuckit, 1984; Rickels *et al*, 1988), which has recently been introduced into the UK. Structurally it bears no obvious resemblance to other anxiolytics, and is unlike benzodiazepines in that it neither inhibits nor stimulates 3H-benzodiazepine binding *in vitro* receptor systems, does not facilitate gamma aminobutyric acid (GABA) transmission, yet has effects on both serotonergic (5HT) and dopamine receptors. It is a 5HT-1A agonist (Peroutka, 1985), and it is possible that this action is related to its effects on anxiety (Vandermaelen *et al*, 1986).

If buspirone is to be an effective alternative to the benzodiazepines, it needs to have both proven efficacy and little or no risk of dependence. In a 14-week trial, active drug was taken for at least six weeks in order to test for evidence of efficacy, followed by withdrawal under double-blind conditions. Diazepam was used as a comparison drug, to test whether dependence was a problem with benzodiazepines after short-term treatment, and to compare pre-treatment with withdrawal data. There is considerable overlap between benzodiazepine withdrawal symptoms and those of normal anxiety (Rodrigo & Williams, 1986), and any improvement in the definition of these withdrawal symptoms would be helpful.

## Method

### Patients

Out-patients seen at general practice psychiatric clinics in Nottingham between 1981 and 1984 were included in the study if they (a) satisfied DSM–III criteria for generalised anxiety disorder (American Psychiatric Association, 1980), (b) had taken no psychotropic drugs in the previous three weeks, and (c) gave informed consent.

### Design

A parallel group design was used, in which patients were randomly assigned to a flexible dose regime of one to four capsules a day of buspirone (5 mg) or diazepam (5 mg) using a double-blind procedure. Half the patients took active drug for six weeks and then switched abruptly to placebo capsules of identical appearance for the remaining eight weeks of the study, while the other half received active medication for 12 weeks before switching to placebo for two weeks. Capsules were returned at each assessment and the dosage taken calculated. Patients who dropped out of the study were monitored by the Pharmacy Department at Mapperley Hospital, Nottingham, and constrained randomised allocation was used towards the end of the study to ensure

TABLE I
*Main demographic data*

| *Groups* | *No.* | *Females* | *Males* | *Mean age: years* | *Age range: years* | *Mean duration of symptoms: months* | *Duration of symptoms $\log x+1$ $x$ = no. weeks* | *Previous benzo-diazepine treatment* | *Previous psychiatric contact* |
|---|---|---|---|---|---|---|---|---|---|
| Diazepam, late withdrawal | 10 | 8 | 2 | 37.5 | 17–61 | 222 | 3.67 | 50% | 40% |
| Diazepam, early withdrawal | 10 | 5 | 5 | 37.6 | 21–55 | 87 | 3.46 | 50% | 40% |
| Buspirone, late withdrawal | 10 | 7 | 3 | 34.7 | 25–54 | 139 | 3.76 | 80% | 50% |
| Buspirone, early withdrawal | 10 | 7 | 3 | 33.3 | 20–51 | 91 | 3.43 | 50% | 30% |
| Drop-outs | 11 | 8 | 3 | 35.6 | 19–60 | 64 | 3.65 | 55% | 36% |

equal numbers in each of the four groups: diazepam, early withdrawal (DEW); diazepam, late withdrawal (DLW); buspirone, early withdrawal (BEW); and buspirone, late withdrawal (BLW).

### Assessments

Psychiatric symptoms were rated on entry to the study and at two-week intervals for the 14 weeks using the Comprehensive Psychopathological Rating Scale (CPRS) (Åsberg *et al*, 1978), together with an anxiety subscale, the Brief Scale for Anxiety (BSA) (Tyrer *et al*, 1984), derived from the CPRS. Additional questions were asked to cover more unusual symptoms, such as perceptual distortion and sensory hypersensitivity, which can be common in withdrawal from benzodiazepines (Petursson & Lader, 1981; Tyrer *et al*, 1981). All three authors acted as assessors.

## Results

Fifty-one patients entered the study, but 11 dropped out. Using the constrained randomised procedure, the remaining 40 patients included ten in each of the four treatment groups. Demographic data for each group are shown in Table I.

The BLW group had a higher initial CPRS score than the other three groups, but the distribution of BSA scores was similar. The apparent difference between the mean duration of symptoms in the DLW group reflects an excessively long duration of symptoms for two patients only.

### Drop-outs

Of the eleven drop-outs, three were taking diazepam and eight took buspirone. All the diazepam drop-outs took place in the first two weeks of treatment. Four of the drop-outs on buspirone left the study during the first four weeks. One patient dropped out of the BEW group three weeks after the change to placebo, and the remaining three were all in the BLW group, with patients dropping out of active treatment after 4, 6 and 12 weeks. The reasons for drop-out included headaches, nausea, and lack of efficacy (diazepam), and depersonalisation, nausea, and chest pain with admission to a general hospital (buspirone). There were no apparent demographic differences between the patients who dropped out and those who completed treatment. Analysis of individual symptoms showed no consistent differences. The patients who dropped out on buspirone did not show an excess of dysphoric symptoms, although three of them developed suicidal thoughts in the second week, which had not been present at baseline. In those completing the study, this symptom occurred in six patients, half of whom were taking diazepam.

### Dosage

The mean dosage taken at each phase of the study showed no significant differences between the groups at any stage. Dosage varied between 1.5 and 2.3 capsules daily (7.5–11.5 mg of diazepam or buspirone).

### Analysis of data

To reduce the exclusion bias that might result from analysis of only those patients with complete information, the initial analysis of variance (ANOVA) was applied to the CPRS and BSA scores of the 44 patients with the most complete data. Of the seven patients excluded, five (three allocated to diazepam and two to buspirone) were lost after the initial assessment, and two (both allocated to buspirone) after the second visit. Of the 44 patients included, 40 provided complete data. The remaining four had data missing

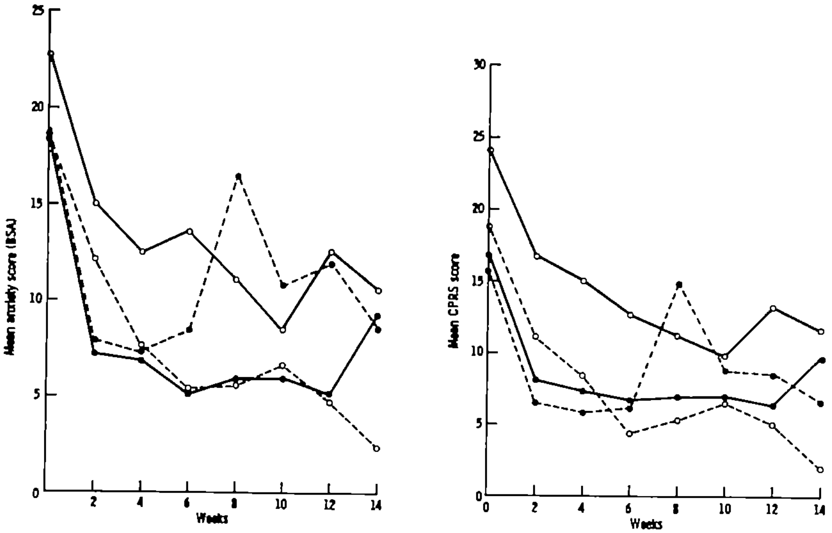

FIG. 1 Mean scores on the BSA and CPRS following early withdrawal (EW) at 6 weeks and late withdrawal (LW) at 12 weeks: diazepam (LW) (●–●) $n=10$; diazepam (EW) (●—●) $n=10$; buspirone (LW) (O–O) $n=12$; buspirone (EW) (O—O) $n=12$.

for a total of 14 assessments, but it was felt important to analyse their scores as they might have dropped out because of significant withdrawal symptoms. Multivariate repeated-measures ANOVA was carried out on the data at the MRC Biostatistics Unit, Cambridge. Examination of individual withdrawal symptoms was also examined using proportional odds models (Cox, 1970) to determine the significance of any new symptoms arising during the withdrawal period (further information available from authors on request).

### Efficacy

The mean scores of CPRS and BSA ratings in each of the four drug groups are shown in Fig. 1. In the first six weeks, all patients were taking either buspirone or diazepam, and so data from the early and late withdrawal groups were combined. The CPRS and BSA scores showed similar findings, although the changes were most marked on the anxiety scale. Diazepam led to a more rapid improvement in symptoms, and it was not until six weeks of treatment that the patients taking buspirone showed equivalent improvement. There was significantly greater improvement in anxiety (BSA) scores in patients taking diazepam compared with buspirone after two weeks' treatment ($t=2.2$, d.f. 154, $P<0.025$).

### Withdrawal symptoms

The most striking finding was the significant increase in symptoms after stopping diazepam after both 6 and 12 weeks (Fig. 1). This was most marked after 6 weeks and highly significant between weeks 6 and 8 ($t=3.6$, d.f. 225, $P<0.001$). Between 12 and 14 weeks there was an increase in the diazepam group, which reached significance using a one-tailed but not a two-tailed test ($t=1.66$, d.f. 225, $P>0.05$).

Neither group taking buspirone showed a significant increase in symptoms on either the CPRS or BSA scales between weeks 6 and 8 (CPRS $t=0.6$, d.f. 225, NS) or between weeks 12 and 14 (CPRS $t=0.25$, d.f. 225, NS). This putative evidence of a significant withdrawal syndrome only occurring with diazepam was confirmed by the analysis of differences between the drugs. At week 8 there was a highly significant difference on all measures between the DEW group and each of the other groups, including BEW (e.g. DEW/BEW: CPRS $t=3.9$, d.f. 125, $P<0.005$). There was no significant difference between the late withdrawal groups at week 12.

Unlike some previous investigations (Schweizer *et al*, 1986; Olajide & Lader, 1987) there was no clear association between previous benzodiazepine use, clinical improvement, and withdrawal symptoms. The patients allocated to buspirone who had received previous treatment with benzodiazepines ($n=13$) had a similar level of improvement after six weeks' treatment (64.9%) as those who had not received benzodiazepines previously ($n=7$) (55.6% improvement).

### Identification of withdrawal syndrome

In previous studies the number of individuals having withdrawal symptoms has been determined by two methods: an increase from pre-withdrawal anxious symptoms of 50% or greater, followed by resolution; and the presence of two or more completely new symptoms after withdrawal (Tyrer *et al*, 1981, 1983). In this study we also have the advantage of having pre-treatment scores, which allowed separation of withdrawal symptoms into two groups: one in which symptoms after withdrawal *exceeded* those before treatment (overshoot group), and those in whom there was a similar pattern of withdrawal but pre-treatment scores were

TABLE II
*Significant differences in individual symptom scores from the CPRS between treatment groups after early and late withdrawal*

| *CPRS variables* | *Significantly higher frequency in DEW group at week 8* | *Significantly higher frequency in DLW group at week 14* | *Significantly higher frequency in BLW group at week 14* |
|---|---|---|---|
| Sadness | + | | |
| Hostile feelings | | + | |
| Inability to feel | + | + | |
| Worrying over trifles | + | | |
| Indecision | | + | |
| Lassitude | + | | + |
| Fatiguability | + | | |
| Concentration difficulties | + | | |
| Aches and pains | + | | |
| Muscular tension | + | | |
| Derealisation | + | + | |
| Observed agitation | + | | + |

TABLE III
*Proportions of patients experiencing withdrawal syndrome after stopping treatment using different criteria of definition*

| *Definition of withdrawal syndrome* | *Drug* | *No. of patients satisfying definition of withdrawal syndrome* n | % |
|---|---|---|---|
| Temporary increase in symptoms beyond initial scores (overshoot)[1] | Diazepam | 2 | 20 |
| | Buspirone | 1 | 10 |
| Temporary increase in symptoms to less than initial score (rebound)[1] | Diazepam | 3 | 30 |
| | Buspirone | 3 | 30 |
| New symptom emergence (two or more) | Diazepam | 6 | 30 |
| | Buspirone | 1 | 5 |

1. These groups include all patients who had an increase in CPRS or BSA symptoms of 50% or more after withdrawal, followed by return to no more than 25% of pre-withdrawal scores. For these groups only the early withdrawal patients are included.

not exceeded (rebound group). As data before withdrawal included symptoms both before and during treatment, it was also possible to determine which symptoms were truly new ones after withdrawal, rather than rely on patients' testimony retrospectively.

Examination of the 65 variables in the CPRS showed that 12 showed significant differences at the 5% level or greater between the four treatment groups (Table II). All except two of these were found only in the patients treated with diazepam, and most of the symptoms showing differences were those of anxiety that are included in the BSA. However, some of the symptoms (sadness, inability to feel, lassitude, and concentration difficulties) are found more often in depressed patients (Montgomery & Åsberg, 1979), and one symptom, derealisation, is a perceptual disturbance that is typical of benzodiazepine withdrawal.

Additional new symptoms reported during weeks 13 and 14 included hypersensitivity to noise, light, touch, and smell, muscle twitching, muscle pain, vomiting, diarrhoea, perceptual abnormalities independent of depersonalisation and derealisation, headache, and throbbing sensations. These were most common in the diazepam group.

Comparison of the three different methods of identifying withdrawal symptoms are summarised in Table III. The results are very similar to those following withdrawal after longer periods of treatment, with approximately a third of patients taking diazepam showing a withdrawal syndrome (Tyrer *et al*, 1981, 1983).

Definition of withdrawal symptoms as a temporary increase in symptoms occurring within two weeks of withdrawal yielded similar numbers in groups treated with buspirone and diazepam. As the data taken as a whole showed buspirone to cause few or no withdrawal symptoms, this particular definition of a withdrawal syndrome may be defective, whereas that including new symptoms is more in keeping with other results (i.e. 6:1 ratio of diazepam to buspirone in predicting withdrawal symptoms). Nevertheless, the finding of a temporary increase in symptoms in three of the ten patients in the BEW group suggests that buspirone should not be regarded as entirely free from dependence potential.

## Discussion

The results suggest that buspirone is effective in reducing anxiety, but acts more slowly than diazepam; this is in agreement with other studies (Tyrer & Owen, 1984; Jacobson *et al*, 1985). Despite suggestions that buspirone has less sedative, anticonvulsant, and muscle-relaxant properties than benzodiazepines (Riblet *et al*, 1984; Cohn & Wilcox, 1986), our analysis of individual CPRS and BSA scores showed no evidence that relief of anxiety was qualitatively different with buspirone compared with diazepam.

The delayed onset of action with buspirone is likely to pose clinical problems. Despite their dependence potential, benzodiazepines are extremely effective antianxiety drugs in the short term, and patients have come to expect a rapid relief of symptoms after taking any antianxiety drugs. It would therefore seem prudent to warn patients about the possibility of delay in efficacy when buspirone is prescribed.

The results following withdrawal of buspirone after 6 and 12 weeks' treatment suggest that it has little or no dependence potential after such a period. However, this does not mean that buspirone has no risk of dependence, because the period of treatment was relatively short. However, when taken with other evidence, particularly a study by Rickels *et al* (1985, 1989), in which buspirone was withdrawn after six months' treatment without any adverse effects being observed, it is reasonable to conclude that buspirone has significantly less potential for dependence than the benzodiazepines.

The most surprising aspect of the results was the high incidence of withdrawal phenomena in patients treated with diazepam for this relatively short period, particularly in the early withdrawal group. Patients also showed an increase in symptoms after stopping diazepam at 12 weeks, but as the study ceased after 14 weeks' assessment is is impossible to know what proportion of these patients suffered withdrawal and who suffered relapse. It is nevertheless surprising that withdrawal effects after 12 weeks were apparently less marked than after 6 weeks of treatment with diazepam, and no satisfactory explanation for this can be given. However, after 12 weeks' treatment the major antianxiety effects of diazepam are conferred by its long-acting metabolite, nordiazepam, and the resulting smooth fall in plasma concentration after withdrawal appears to offer some protection against withdrawal symptoms (Tyrer *et al*, 1981). However, this hypothesis cannot be confirmed, as we did not measure diazepam or nordiazepam blood levels.

The withdrawal symptoms after 6 and 12 weeks' treatment are indistinguishable from those of pathological anxiety, although there is a relative excess of symptoms normally found in depression and perceptual disturbances. Although in some patients the symptoms were marked, all patients taking diazepam who continued beyond two weeks' treatment completed the study, despite experiencing marked symptoms of withdrawal in some instances. There was therefore 100% success rate in achieving withdrawal with diazepam. Despite the higher incidence of withdrawal problems with diazepam, 8 of the 11 drop-outs in the study were taking buspirone. All except one of these 8 patients were taking active drug when they dropped out of the study, and none did so while taking placebo. This suggests that buspirone may have some additional effects that hinder treatment compliance. There is some evidence of dysphoria after acute treatment with buspirone (Lader, 1982), and our findings suggest that this may extend into longer-term therapy. The higher incidence of suicidal thoughts of patients taking buspirone and who subsequently dropped out supports this notion.

The results of this study, reinforced by those of others (Fontaine *et al*, 1984; Power *et al*, 1985; Griffith *et al*, 1986) support the general principle that intermittent rather than regular treatment with benzodiazepines is preferable (Tyrer & Murphy, 1987), and that in the treatment of anxiety "benzodiazepines ideally should be prescribed for no more than one month" (Royal College of Psychiatrists, 1988). Once duration of treatment has reached this critical stage, dependence becomes a potential risk and, if withdrawal symptoms are to be avoided, gradual rather than sudden cessation of treatment is preferable.

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# Significance of Extreme Temperament in Infancy for Clinical Status in Pre-school Years

## I: Value of Extreme Temperament at 4–8 Months for Predicting Diagnosis at 4.7 Years

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The relationship between extreme temperament in infancy and clinical status at 4.7 years of age was studied in temperamentally different groups of infants matched for sex and SES, and subselected from a large birth cohort representative of the general population. The effects of certain dimensions of family functioning and of other risk factors were examined. By itself, extremely difficult temperament in infancy had no strong direct association with clinical outcome at four years of age, whereas temperament assessed at four, family attitudes to discipline, and stressful events did. However, extreme temperament in infancy might indirectly affect outcome through its association with temperament at four. The interplay between adverse temperament and parental attitudes of discipline previously observed in middle childhood might have antecedents in pre-school years.

Epidemiological studies have established that between 7% and 15% of pre-school children suffer some form of behavioural or developmental disorder (Richman *et al*, 1982). Contrary to former belief, empirical data suggest that children's behavioural disorders, even when slight, are persistent (Richman *et al*, 1982). The correlation of childhood psychiatric disorders with a number of factors has been consistently replicated: parental discord, maternal depression, parental mental illness, male sex, extremely low socio-economic status (SES), family overcrowding, father's criminality, the noxious or protective effect of variables within the schools, as well as possibly a low IQ and stressful life circumstances (see for review Rutter (1983) and Maziade (1986)). There is now a need to investigate the mechanisms through which those risk variables exert their effect, and it seems to be accepted (Rutter & Sandberg, 1985) that intensive longitudinal studies of specially selected risk samples represent a promising way towards understanding what makes some children more vulnerable than others to adverse environments.

Even though some longitudinal and cross-sectional studies suggest that adverse temperamental traits predispose a child to developmental and psychiatric disorders, the role of temperament as a predisposing factor requires clarification (Berger, 1985): research results must be interpreted with regard to the developmental period under study, the type of sampling, and the differences in operational definition of what is usually called 'difficult' temperament. The New York Longitudinal Studies (NYLS) (Thomas & Chess, 1977), conducted in a middle-class and upper-middle-class sample, inductively developed the concept of 'difficult' temperament, and suggested that a profile composed of low adaptability, withdrawal from new stimuli, high intensity, negative mood, and a low level of rhythmicity was associated with more frequent consultations for behavioural disorders in childhood; they later reported (Thomas & Chess, 1982) that this temperament constellation was predictive of adult adjustment only when assessed at ages 3–5 years, but not in infancy. Wolkind & DeSalis (1982), using a sample of first-born children from an antenatal clinic in a deprived area, found in a longitudinal study a slight or non-significant association between a temperamental factor (negative mood and irregularity) assessed at four months of age and the number of symptoms at three and a half years. The longitudinal study of Lee & Bates (1985), using a solicited sample from infancy to three years of age, uncovered a slight but statistically significant association between a 'difficult' factor (frequent crying and fussing) and a high resistance tendency, with mother–child disciplinary conflicts.

There is, however, stronger empirical evidence that temperament assessed at later ages is predictive of behavioural outcome. Recently, in subsamples drawn from a large random sample of seven-year-olds in the general population, Maziade *et al* (1985) found that extreme temperamental traits (low adaptability, withdrawal from new stimuli, high intensity, negative mood, and low distractibility), based on a factor (principal-component analysis) very similar to the NYLS 'difficult' factor (Thomas *et al*, 1968), predicted clinical disorders at age 12. Our study (Maziade *et al*, 1985) also showed that symptoms at home were particularly outwardly directed and oppositional, and that family functioning in terms of behaviour control (parental discipline) interacted with temperament to predict outcome. In families where discipline lacked parental consensus, and where rule setting and enforcement lacked clarity and consistency, temperamentally difficult children presented more disorders at age 12. Moreover, a cross-sectional study of a random sample of seven-year-olds from the Quebec City population indicated that boys were twice as likely as girls to be of 'difficult' temperament (Maziade *et al*, 1984*a*). This suggested that 'difficult temperament' as defined by the NYLS, could be one of the factors making boys more vulnerable to psychosocial and physical stresses. In a four-year longitudinal study of children in middle childhood living with a psychiatrically disturbed parent, Quinton & Rutter (1985) found that subjects with adverse temperament (negative mood, low regularity, low malleability, and low fastidiousness) were more likely to present persistent disorders, and to be the target of parental hostility when parents were in discord. Other studies of children three to seven years old (Graham *et al*, 1973; Earls *et al*, 1982) have shown that behavioural symptoms were more likely to be concurrently associated with traits of adverse temperament.

Thus, the strength of the association between difficult temperament in infancy (or in pre-school years) and clinical outcome is still controversial, whereas such an association seems more consistent from the ages of four to five years and in middle childhood. The effect of difficult temperament in the first years of life, its interactions with other well replicated risk factors, and the circumstances potentiating its adverse effects all require further examination. Some data (Maziade *et al*, 1985; Lee & Bates, 1985) suggest that investigations of the type of association between adverse temperament, oppositional symptoms, and parental attitudes of discipline are also warranted. Another controversial issue pertains to defining the temperament groups by using either individual temperament characteristics or an aggregation of traits: present empirical data point to aggregating traits as a promising procedure for better uncovering consistent relationships with concurrent or predictive parameters (Epstein, 1980; Rutter, 1982; Matheny *et al*, 1984; Maziade *et al*, 1986*a*).

The present study was to ascertain whether extremely difficult temperament in infancy is associated with clinical outcome at 4.7 years of age, when the effect of family behaviour control, family communication, and other environmental risk factors are taken into account, as well as to test hypotheses concerning the inter-relationships between difficult temperament, family behaviour control (parental discipline), and the appearance of clinical disorders.

Many methodological aspects of the present study were chosen in the context of the literature previously described. (a) Particular attention was given to the sampling: temperamentally extreme infants assessed on two occasions were selected from a random sample of our general population, to see whether the inclusion of extreme levels would increase the predictive power of infant temperament during the pre-school years. (b) We characterised our subjects on a temperamental factor which we had empirically replicated in infancy and at seven years of age in our general population, and which is similar to the NYLS 'easy–difficult' typology. (c) In order to uncover both possible interactions and the relative predictive power of these factors, in comparison with extreme temperament, we assessed many environmental risk variables that are already well replicated. (d) Given that parental control has already been empirically associated with difficult temperament, we evaluated that particular family dimension, as well as the functioning of the family in terms of communication. (e) The study was conducted double-blind to the scores of infant temperament. (f) As in previous work, we used existing reliable instruments as much as possible to increase the comparability of our results with other studies.

## Method

### Sample

We selected three temperamentally different subgroups of infants from a large birth cohort. The portion of that cohort that was visited ($n = 358$) has already been described in detail (Maziade *et al*, 1984*b*); it consisted of all babies born within a specific period in the catchment area of a community health department of Quebec City, where all births are officially reported. Those infants were assessed by means of a French version of the revised Infant Temperament Questionnaire (ITQ) (Carey & McDevitt, 1978), at four and eight months of age. The ITQ is based on the nine categories of temperament of the NYLS. All infants were characterised by their factor scores on a bipolar first factor (Factor 1) (principal-component analysis) whose stability in infancy and at the age of seven years (Maziade *et al*, 1984*a*,*b*) has been demonstrated in our general population. The similarity of Factor 1 with the NYLS 'easy-difficult' typology has already been discussed (Maziade *et al*, 1986*a*); five categories loaded strongly on this factor: adaptability, approach/withdrawal, intensity, mood, and distractibility.

Controversy has existed over the possibility of a strong subjective component creating unwanted bias in the maternal report of child temperament, but new data clearly support the validity of such reports. Both objective and subjective elements are found in temperament ratings (Bates, 1986; Rutter, 1987); concerning the component consisting of the aggregation of adaptability, mood, and approach/withdrawal, recent analyses (Matheny *et al*, 1987) of concordance with laboratory measurements indicate the presence of a predominant objective substratum for this temperamental factor which is assessed by questionnaire; additional but marginal variance was explained by environmental or maternal characteristics.

### *Subgroups of temperament*

Three subgroups were selected according to temperament centile ranks (based on distribution in the general population) of scores on Factor 1 at both four and eight months: difficult temperament, ⩾70th centile ($n=29$); average, 31st–69th centile ($n=29$); and easy, ⩽30th centile ($n=29$). The three subgroups were matched for sex and SES: research codes were used for the selection, so that all investigators and parents remained blind to the scores of infant temperament. Of the parents, 92% ($n=80$) were reached and agreed to participate (children's mean age at follow-up: 4.7 years; s.d. = 0.10). The family functioning of one subject was not assessed because of geographical distance at the time of follow-up. The sample consisted of 62% boys. The Hollingshead (1957) SES structure of the sample was: 8% classes I and II, 19% class III, 33% class IV, and 40% class V. There were no differences between the temperamental subgroups in terms of family size (mean: 1.92; s.d. = 0.92), and children rank (mean: 1.64; s.d. = 0.96).

## Instruments

*Behavioural status at four years old.* A semistructured interview (a French translation of the Behaviour Screening Questionnaire (BSQ) (Richman *et al*, 1982)) was audiotaped at home by a psychiatrist who requested concrete descriptions of 12 types of behaviour from the parents. The reliability and concurrent validity of the BSQ have been documented in many studies (Earls, 1980; Earls *et al*, 1982; Richman *et al*, 1982). After gathering sufficient information, the interviewer rated, during the interview, each of the 12 types of behaviour on a scale of 0, 1, or 2, according to the BSQ structured criteria, giving a total score of between 0–24. This audiotaped home interview was independently reviewed by another psychiatrist of the research team; an inter-rater reliability of 0.74 (median $r$) was obtained at the item level and 0.89 on the total BSQ scores. In other studies, a BSQ score >10 discriminated subjects attending a psychiatric clinic from the general population (Richman *et al*, 1982).

*Temperament at four years old.* This was evaluated twice, at a three-week interval (test–retest median $r=0.73$), by means of a French version of the 72-item Parent Temperament Questionnaire (PTQ) (Thomas *et al*, 1977), filled in by parents, and based on the nine NYLS categories. The reliability, structure, and demographic characteristics of the PTQ French version in our general population have already been reported (Maziade *et al*, 1984*a*). In this present sample also, a principal-component analysis was run on the means of the nine categories assessed at four years of age, and a bipolar first factor (on which the same five categories loaded strongly) came out at the test and retest, similar to Factor 1 found in infancy and at seven years old (Maziade *et al*, 1989 – this issue, pp. 544–551). Each subject at four years old was then characterised by an average of his test and retest Factor 1 scores; according to the analyses, we defined the subjects (a) on the whole continuum on the factor scores distribution, (b) in categories according to percentile score (difficult<25th centile; easy>75th; 25th⩽ average⩽75th).

*Family functioning.* The McMaster semistructured interview (Epstein *et al*, 1982; Bishop *et al*, 1984; Maziade *et al*, 1987*b*) was audiotaped by experienced interviewers (JT, HB) at home with the whole family. We assessed two dimensions of the McMaster Model of Family Functioning (MMFF): behaviour control and communication. The MMFF behaviour control item assesses the clarity of the family rules, the consensus between parents about the rules, and their firmness, consistency, and flexibility when children violate the rules. The MMFF communication item assesses the quantity and the quality of instrumental and affective communication. The interviewer rated the MMFF on a scale of one to seven for each dimension: <4 corresponds to dysfunctional levels, =4 to normative functioning, and >4 to superior functioning. The inter-rater reliability ($r=0.79$–$0.85$) and the demographic characteristics of the MMFF scale have been described in detail elsewhere (Maziade *et al*, 1987*b*).

*Maternal depression.* This was evaluated by means of the Zung self-rating depression scale (Zung, 1973), which was also administered twice at a three-week interval (test–retest reliability, $r=0.89$), and each mother was characterised by her average score. According to the analyses, we used the scores on a continuous scale, and also on a discrete scale with three categories: depressive (a score ⩾2.0 on both occasions) ($n=16$); moderately depressive (a score ⩾1.8 on both occasions) ($n=9$); and the others. Validity studies of the Zung scale suggest that a score higher than 2.0 presents a good concordance with depression as assessed by a psychiatric interview (Zung, 1965; Zung *et al*, 1965). All depressive young mothers and 78% of the moderately depressive were in lower Hollingshead classes (IV and V). This prevalence of depression, and its strong association with working-class status, are congruent with the findings from other studies of depressed mothers of young children (Brown *et al*, 1975).

*Life events, marital discord, SES, and child's IQ.* We used the first 12 items of the Holmes & Rahe (1967) scale to assess stressful life events in the past year. A global impression of marital discord was rated after the family interview on a scale of zero (no conflict) to three (severe discord) (Maziade *et al*, 1987*b*). The SES was categorised according to the Hollingshead (1957) two-factor index of social position, taking the higher parent in terms of education and income. The child's IQ was assessed by means of the Wechsler Pre-school and Primary Scale of Intelligence (WPPSI) (Wechsler, 1967) administered at home by a psychologist (PB).

### Procedure

Four home visits were made: the first to explain the study to the parents and obtain their signed consent, one to assess the clinical status of the child (MM), one to assess the family functioning (HB or JT), and one to assess psychometrically the child's intellectual development (PB). Data about stressful events were gathered after the assessment of clinical status. All the investigators (and parents) were kept blind to the infant temperament score, and refrained from discussing their interviews with the other investigators. The parents filled in the PTQ and the Zung scale; after returning the first set of questionnaires, they were posted another set after three weeks.

### *Behavioural status at four*

Two methods were used to define the behavioural status at four years. First was a categorical method, based on a clinical judgement as to whether the child was disordered or not. This judgement was made blind to the temperament scores, and independently by two child psychiatrists after they reviewed the whole clinical interview. Second was a BSQ additive score (the number of externalised or internalised symptoms), placing the subjects on a continuum. Both methods were used because a child presenting only a few but very severe symptoms is disordered, whereas some children presenting many slight symptoms are not noticeably deviant. After the structured interview, the investigator made a decision as to whether the child was definitely psychiatrically well, presenting slight problems, or suffering a definite disorder (moderate or severe); the symptoms and problems of the latter category had to be important enough to disturb the child's family life and/or the social environment, and to warrant a consultation in a child-guidance clinic. The inter-rater agreement on the clinical judgement with another psychiatrist who reviewed the taped interviews was satisfactory ($r=0.81$). Thirteen children were definitely disordered in our sample: three presented externalised symptoms only, seven a combination of externalised and internalised symptoms, two externalised disorders associated with slight language or neuromotor delay, and one internalised symptoms only. Eighteen other children who presented mild problems could not be judged as definitely normal: 11 presented externalised problems, two internalised problems, and five a combination of externalised and internalised symptoms. When using a BSQ cut-off score of 10 or more, sensitivity and specificity with respect to the diagnosis of definite disorders made by a clinician were respectively 80% and 93%. This is comparable to the figures obtained with the BSQ in other epidemiological studies (Earls *et al*, 1982; Richman *et al*, 1982). The mild disorders had a mean number of 6.5 symptoms (s.d. = 2.18).

## Results

As in our previous work, many complementary methods were used to analyse the data. In the multivariate analyses, the numbers of subjects varied because of missing values on some of the independent variables. Bivariate analyses were first performed: Table I shows a non-significant association between infant temperament and slight or definite disorders assessed at four ($\chi^2=3.74$, d.f. = 2, $P=0.15$); in using a $\chi^2$ for trend, the association was only close to significance ($\chi^2=3.72$; d.f. = 1; $P=0.054$). On the other hand, Table I shows that the association between temperament at four years and disorders is statistically significant; the use of many cut-off points on the temperament distribution gave similar results. In bivariate analyses, both slight problems and definite disorders were significantly more frequent in families which were dysfunctional in terms of behaviour control, but not dysfunctional in terms of communication (Table II).

Secondly, in order to control for the effects on clinical outcome of the ten independent variables that were measured (temperament in infancy, temperament at four years, family behaviour control, family communication, SES, sex, maternal depression, stressful events, parental conflict, and the child's IQ), multivariate statistical analyses were performed. Also each multivariate analysis was repeated with eight independent variables (family communication and parental conflict were excluded in order to keep the single-parent families in the analyses), and that led to similar results. Through a stepwise discriminant analysis of the ten independent variables, we looked at those that discriminated best between the behaviourally disordered (both definitely and slightly disordered) and the normal group ($n=76$; three subjects had missing information on one of the independent variables). Again, out of all the independent variables that were assessed, in step 1, behaviour control (partial $r^2=0.09$, $F=7.23$, $P=0.009$) and, in step 2, temperament at four years (partial $r^2=0.04$, $F=3.18$, $P=0.08$) discriminated between the two groups.

In order to search for possible predictive interactions between the independent variables, we performed a set of log linear analyses, and entered all the possible combinations of two or three of the following variables: behaviour control, and temperament at four years (shown to be important in the previous analyses), infant temperament, stressful events, maternal depression, and SES. Again, in taking account of the effect of the other variables in the analyses, only behaviour control ($0.01<P<0.03$) and temperament at four years ($0.01<P<0.02$) consistently showed a significant main effect on behavioural outcome, although stressful events also displayed a significant direct effect on outcome ($0.01<P<0.05$). No consistent, significant statistical interactions between any two independent variables were observed.

TABLE I

*Distribution of behavioural disorders in the infant temperament groups and in the temperamental groups at four years (n = 79)*[1]

| | *Temperament in infancy* | | | *Temperament at four years* | | |
|---|---|---|---|---|---|---|
| | *difficult* | *average* | *easy* | *difficult ($\leqslant$25th)* | *average (25–75th)* | *easy ($\geqslant$75th)* |
| Slight and definite disorders[2] | 13 (5) | 11 (5) | 7 (3) | 13 (6) | 12 (5) | 6 (2) |
| No disorders | 12 | 16 | 20 | 7 | 26 | 15 |
| | $\chi^2=3.74$ d.f. $=2$ $P=0.15$ | | | $\chi^2=7.50$ d.f. $=2$ $P=0.02$ | | |

[1] One case is missing since the BSQ was impossible to administer because of a temporary move to Europe.

[2] Definite disorders are in parentheses.

TABLE II

*Distribution of behavioural disorders in the different family functional groups*

| | *Behaviour control (MMFF scale) (n = 79)* | | | *Communication (MMFF scale) (n = 65)*[1] | | |
|---|---|---|---|---|---|---|
| | *<4* | *=4* | *>4* | *<4* | *=4* | *>4* |
| Slight and definite disorders | 12 | 9 | 10 | 9 | 7 | 8 |
| No disorders | 8 | 11 | 29 | 11 | 10 | 20 |
| | $\chi^2=6.92$ d.f. $=2$ $P=0.03$ | | | $\chi^2=1.53$ d.f. $=2$ $P=0.47$ (NS) | | |

[1] Single-parent families ($n=13$) are excluded because of the difficulties in assessing MMFF communication in such young families in the absence of one parent. One intact family had missing information on communication. The possible bias in excluding those families was tested and no difference of proportion of clinical cases was observed between single-parent and intact families ($\chi^2=0.31$; d.f. $=1$, $P=0.58$).

TABLE III

*Distribution of behavioural disorders according to temperament at four years and family behaviour control (n = 79)*

| | *Disorders* | *Difficult ($\leqslant$25th)* | *Average (25–75th)* | *Easy ($\geqslant$75th)* |
|---|---|---|---|---|
| Dysfunctional families (MMFF $\leqslant$ 4) ($n=40$) | Present | 8 | 7 | 6 |
| | Absent | 2 | 10 | 7 |
| Functional families (MMFF > 4) ($n=39$) | Present | 5 | 5 | 0 |
| | Absent | 5 | 16 | 8 |

Table III gives the distribution of disorders according to the factors of temperament at four years and family behaviour control. It suggests that the risk effects associated with a difficult temperament and with a behaviour control dysfunction are clearly additive: while the rate of disorders is respectively 50% and 43% in subjects having only one of these two adverse factors (5/10 and 13/30), the rates in subjects having both, versus those who have none, are respectively 80% (8/10) and 17% (5/29).

### Risk variables and temperament

From all those complementary models of analysis, extreme infant temperament, by itself, did not come out as a variable strongly associated with behavioural outcome, whereas temperament assessed at four years, family behaviour control, and stressful events did. However, all the previous analyses tested hypotheses as to whether infant temperament was associated with clinical outcome, while considering infant temperament as a potential risk variable like all the others which entered the multivariate analyses. Such models of analysis do not test whether difficult and easy temperaments respectively in infancy are factors of vulnerability to or protection from adversity or risks. Indeed, to do so we have to test the possible effect of infant temperament on the association between risk variables and clinical status. Hence, we built an additional model in which we hypothesised that the two risk variables (dysfunctional behaviour control and stressful events), which were found to be associated with clinical status at four years of age in our sample, would show a stronger association with clinical disorders in the temperamentally difficult group of infants, and, conversely, less association in the temperamentally easy group. For each subject, we obtained a risk score ranging from zero to four, composed of behaviour control and stressful events: MMFF $<4$, $=4$, $>4$ weighted respectively 0, 1, 2; and an absence of stresses, the presence of one, the presence of more than one weighted respectively 0, 1, and 2 on the risk score. We correlated this risk score with the clinical status (1 = normal, 2 = mild disorder, 3 = definite disorder). Whereas this risk score shows a correlation of 0.26 ($P=0.02$) with clinical status in the whole sample, these exploratory data suggest that risks are less associated with clinical disorders in infants of easy temperament (Table IV).

In order to investigate this pattern of association further, we divided the BSQ symptoms into those internalised (soiling, sleep problems and night awakenings, shy and

TABLE IV
*Correlations between the risk score*[1] *and the clinical outcome at four years in the total sample and in each infant temperament group*

| | *Clinical status*[2] | *Externalised symptoms*[3] | *Internalised symptoms*[3] |
|---|---|---|---|
| In total sample ($n=79$) | 0.26* | 0.25* | 0.25* |
| In difficult infants' group ($n=25$) | 0.26 | 0.31 | 0.12 |
| In average infants' group ($n=27$) | 0.41* | 0.39* | 0.18 |
| In easy infants' group ($n=27$) | 0.04 | −0.10 | 0.42* |

1. The risk score consists of a weighted score combining the degree of dysfunctional behaviour control in the family and the number of stressful events.
2. The clinical status was divided in absence of disorder (a), mild problems (b) and definite disorder (c).
3. Each child was characterised by the number of externalised or internalised symptoms on the BSQ interview.

$^*P<0.05$.

inhibited with siblings or peers, clinging and dependent, worries and anxious, fears) and into those externalised (trouble going to bed, hyperactive, short concentration, quarrelling, bullying siblings or peers, difficult to discipline, tantrums), and made an additive score for each category. Interestingly, Table IV suggests that the risk score is associated with a different type of symptomatology, according to the temperament of the subjects in infancy. While, in the easy-temperament group, risks are not associated with externalised symptoms, they do seem to be associated with internalised symptoms more than in the other infant temperament groups. Thus, these exploratory data suggest (though the small size of the subsamples imposes caution) that easy temperament in infancy protects against dysfunctional behaviour control and environmental stresses, regarding the appearance of externalised symptoms. On the other hand, subjects of extremely easy temperament in infancy are more prone to develop internalised symptoms, although these are not judged by experienced psychiatrists as being clinical or frankly deviant at the age of four.

## Discussion

Our present findings suggest that by itself, extreme temperament, based on measurements taken on two occasions at four and eight months old, little influences clinical outcome at 4.7 years in the general population. However, adverse temperament assessed at 4.7 years old was associated with disorders, even when taking account of the effects of the other risk variables assessed. This, and our previous finding that, from age seven years, this same temperamental factor predicts psychiatric disorders at 12 years old in the general population (Maziade *et al*, 1985), suggest that this factor (an aggregation of five traits) is associated with overt disorders only at about four years old and after. These results are congruent to some degree with those of Thomas & Chess (1982), who reported that it was only when assessed at three to five years old, but not before, that difficult temperament predicted long-term adjustment in the NYLS subjects.

Two other studies (Wolkind & DeSalis, 1982; Lee & Bates, 1985) found no or only slight association between temperament assessed in infancy and symptoms in pre-school years; but we have to consider at least three types of methodological differences between studies, when comparing the results: the age-interval under study, the sampling, and differences in the operational definition of 'difficult' temperament. Wolkind & DeSalis (1982), in a sample of first-born children from a deprived area, used a factor composed mainly of mood and rhythmicity of physiological functions assessed at four months old, and found a non-significant effect (analysis of variance: $P>0.10$) of temperament on the number of symptoms on the BSQ at three and a half years, whereas maternal depression interacted significantly with infant temperament to predict symptoms. Lee & Bates (1985), using a 'difficult' factor composed mainly of fussing and crying items assessed in infants, found that difficult temperament was slightly associated ($r \simeq 0.20$) with conflicting mother–child interactions with respect to control and discipline at two years, and with difficulties in the area of impulsivity and activity. We did not use items directly assessing fussing and crying, but rather the factor, recurrently found at different ages in our general population, that describes infants as withdrawing, intense, presenting a negative mood, least adaptable, and least distractible (soothable). We have already reported (Maziade *et al*, 1984*b*) that in the general population, only a proportion of parents of such extreme infants on those five traits, reported problems with their infants at that early period, or thought that they were more difficult to manage than average. Our observations suggest that extreme infants on the NYLS factor are not directly or necessarily equivalent to problem or disordered infants, but simply are seen by parents as being extreme on those five temperamental traits.

Previous empirical findings about the effect of parental discipline on children's behavioural status in pre-school years (Maziade, 1986) are still scarce, and both our present and previous data (Maziade *et al*, 1985) clearly suggest that this does affect the genesis of children's behavioural disorders, which deserves more investigation. In addition, our present

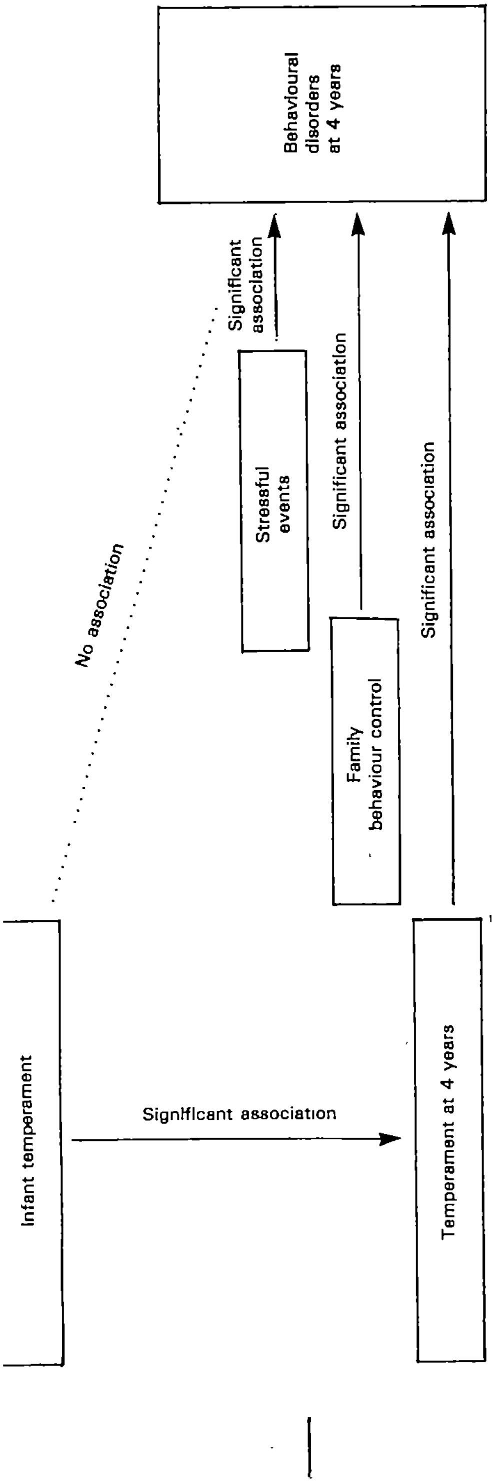

FIG. 1 Patterns of association between variables and clinical outcome.

data suggest an additivity of the risks associated with difficult temperament at four and with family behaviour control. To what extent is this additivity a precursor to the interplay between extreme temperament and family behaviour control that we previously found in middle childhood (Maziade *et al*, 1985)? Our next follow-up study on the present sample should answer the question.

Since our empirical data disclose no direct association between difficult temperament assessed in infancy and disordered behaviour in pre-school years, does this mean that difficult temperament is without clinical or developmental meaning in the first years of life? In the current state of knowledge, certainly not. However, six sets of data (a–f below) call for further investigation before closing the issue. It has often been advocated that research results must be interpreted in terms of the dynamic interactions between the characteristics of the child and family attitudes which evolve over the years. The patterns of cross-sectional and longitudinal associations that were found in the studies must therefore be formulated in terms of the family and social rules which become ever more complex and demanding as the child grows up. Hence, those sets of results should be put in a developmental sequence.

(a) As illustrated in Fig. 1, our present findings suggest that although it is not by itself associated directly with behavioural outcome at four years of age, extreme infant temperament might have an indirect influence on clinical outcome through its significant association with temperament assessed at four, which in turn is found to be significantly associated with clinical status at that age. We have indeed found (Maziade *et al*, 1989, this issue, pp. 544–551) a significant association between extreme temperament in infancy and temperament assessed at four, especially in boys (partial $r=0.41$, $P<0.005$), when the effects of all other variables assessed were partialled out. (b) Lee & Bates (1985) showed that difficult temperament in infants (mainly fussing and crying) was associated with mother–child conflicts involving control at two years of age. (c) The present study has shown an addition of the risks associated with family behaviour control and adverse temperament assessed at four years. (d) We have previously shown (Maziade *et al*, 1985) that the NYLS difficult temperament, assessed at the age of seven, predicted clinical disorders at 12 in the general population; the symptoms were outwardly directed at home, and were especially oppositional in nature. Also, a family that was dysfunctional in terms of behaviour control increased the risk of such disorders associated with adverse temperament, whereas good behaviour control reduced the risk considerably.

From all the above data, a developmental hypothesis emerges: a child of difficult temperament, with a less adaptable, withdrawing, more intense, and emotionally negative reactional style, might have a special propensity for increasing disciplinary conflict with parents in the pre-school years, as he/she acquires more functional autonomy. However, since in the first years the child has not yet faced the more complex or demanding social and family rules of school years, the excessive solicitation or resistance of the difficult child is less strenuous for the parents. Even if this abrasive process between difficult temperament and family behaviour control is active, it has not yet degenerated into overtly dysfunctional processes or into frequent clinical disorders. This could explain the absence of a manifest association between extreme infant temperament and disordered behaviour in that period, as well as the absence of an overt statistical interaction between infant temperament and behaviour control which could predict disorders. With school years, though, the difficult child would progressively wear down and even exceed the insufficient adaptive abilities of some parents in terms of discipline and control, whereas parents with superior qualities could cope better, and overcome the disciplinary problems. Because of the increasing and cumulative friction between the child's temperament and the parents' attitudes, it would then be only in middle childhood that a strong additive or synergistic effect of extremely difficult temperament and family behaviour control on behavioural disorders becomes clearly apparent, between 7 and 12 years, as we have reported: we hope that the next follow-up, to be carried out on the present sample in middle childhood, will allow us to verify this developmental hypothesis and to see whether the findings will overlap our previous ones between ages of 7 and 12.

(e) We have already reported (Maziade *et al*, 1987*a*) that extreme infant temperament, in interaction with family communication or SES, presented a strong association with IQ at four years. Indeed, difficult infants showed a strikingly higher IQ at four in families of upper and middle SES and with superior communication; our data were compatible with the hypothesis that extremely difficult infants, through their intense solicitation, were receiving more stimulation from upper- and middle-class families with good communication patterns, thus generating a process that better stimulates their intellectual development. In addition, many studies (Werner, 1982; Richman *et al*, 1982; Rutter, 1983) provide data suggesting that low IQ is a risk factor associated with behavioural disorders in children, whereas a higher IQ is associated to a lower rate of such deviancies. Considering all these data, in the pre-school years, there might be a factor supposedly of vulnerability (extremely difficult temperament) associated with a protective one (higher IQ), and conversely, a potentially protective factor (extremely easy temperament) associated with a risk (lower IQ). A cancellation of these two effects in the pre-school years might thus partially explain the absence of a strong association between extreme infant temperament and clinical behavioural disorders during those years.

(f) According to the present data, it might also be that in the first years of life, temperament indirectly affects clinical outcome in pre-school years, by making the child either more or less vulnerable to adverse environmental factors.

It is unfortunate that we could not have a measurement of family functioning or of maternal mood when our subjects were infants. A sound assessment of family behaviour control is almost impossible in families where the children are not old enough to create the necessary occasions in which we can assess family functioning in terms of rules, consensus, and consistency. Given the inherent difficulties in measuring temperament, some consideration of its independence and validity is certainly warranted. One must ask whether parental ratings of temperament are identifying a tangible chunk of characteristics within the child, or merely consist of parental impressions (Maziade *et al*, 1986*a*): the answer is certainly not to be found in conceptual and theoretical considerations, but in empirical testing, using proper samplings. Epidemiological data so far suggest that when they are appropriately used to answer specific research questions, parental questionnaires are able to generate stable results and consistent relationships (Maziade *et al*, 1986*a*). Our ratings of temperament came from the parents, who know the reactions of their child best, whereas laboratory measures are rated by objective investigators, who observe the child for only a few minutes or hours in an unusual environment. We are unlikely to find a better concordance ($r \simeq 0.50$) between the two types of measurements than has been obtained so far (Matheny *et al*, 1987). The issue is no longer concerned with the best of two types of measurements, but with which is the most useful for answering specific questions; then, empirical data will speak for themselves. Through a research design such as ours, parental ratings are the only feasible way to subselect extreme subjects from a large, population-based sample.

We observed that maternal mood was moderately associated with temperament at four years of age ($r \simeq 0.30$), but not with temperament in infancy.

However, some studies (using solicited samples that were voluntarily and appropriately biased in order to answer other specific questions) report a slight association, for instance, between the mother's anxiety and the child's temperament (Vaughn *et al*, 1981). One may ask whether it is possible that when we selected the extremely difficult versus the easy infants in our population, we were in fact picking up the depressive or anxious mothers versus the euthymic ones. This seems unlikely because of two empirical findings. Firstly, it has been shown that the distribution of depressive and anxious mothers of young children in the general population is strongly associated to SES (80% or more of the depressed and anxious mothers are working-class) (Brown *et al*, 1975), and similar figures were observable in our sample. Secondly, all our epidemiological studies of temperament at different ages, in random samples of the general population, clearly showed that both extremely easy and difficult subjects on this temperamental factor are distributed homogeneously in the five Hollingshead (1957) classes (Maziade *et al*, 1984*a*,*b*, 1986*a*). Consequently, a significant overlapping of maternal depression and extreme infant temperament in our general population is improbable.

In conclusion, our present and previous studies suggest the following. (a) With age, extreme adverse temperament presents an increasing association with children's behavioural status. (b) The symptoms associated with difficult temperament often take the form of opposition and of resistance to social rules. (c) Parental attitudes to discipline might play a significant role in the 'fit' between the child's difficult temperament and the environment, especially over a period of many years. (d) Directing some of our research efforts to this possible interaction might be promising for a greater knowledge of developmental risk, of prevention, and of the treatment of child and youth disorders, especially those that take the form of negative opposition, misconduct, and resistance to family and social rules.

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*Details of the authors and a combined bibliography will be found at the end of Paper II.*

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# Significance of Extreme Temperament in Infancy for Clinical Status in Pre-school Years

## II: Patterns of Temperament Change and Implications for the Appearance of Disorders

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Few, if any, of children's behavioural or cognitive characteristics assessed in the first years of life demonstrate stability until later childhood; early characteristics have so far failed to show an association with future psychopathology. This longitudinal study, from 4–8 months to 4.7 years old, focused on stability and change of extreme temperamental traits in groups of infants subselected from a large birth cohort. Persistent extreme temperament at four and eight months old did not increase stability of temperament to four years of age, relative to other children in the whole population. Sizeable change occurred, and the environmental parameters associated with negative temperamental change did not seem to be the same as those related to positive change. Boys with extreme scores were more stable, while girls appeared more prone to positive change. It is hypothesised that the direction of temperamental change in the first years could be more meaningful for long-term prediction of disorders than any one assessment of temperament taken at any one year.

Some general facts in developmental psychopathology are now clearly established. (a) At least as many discontinuities as continuities of behavioural characteristics exist across childhood into adult life (Kagan, 1980; Rutter, 1984; Clarke & Clarke, 1985; Chess & Thomas, 1984). (b) Early experiences do not have the long-lasting effect on the development of personality and on future psychopathology that were previously thought to exist (Kagan, 1980; Rutter, 1984; Clarke & Clarke, 1985). (c) In future research, developmental consistency during one period (as well as its environmental or biogenetic determinants) cannot be presumed, apart from the context of preceding influences (Clarke & Clarke, 1985). (d) Groups of children with extreme characteristics present patterns of continuity that are different from those of the whole population (Rutter, 1984).

The intertwinings of biological and environmental factors, development, and psychopathology in children are not well understood (Rutter, 1984; Dunn, 1986). What distinguishes children, whether living in a socially adverse environment or not, presenting seriously deviant behaviour that changes positively over the years from children that keep their behavioural deviancies? Also, what differentiates the many children with no problems in early childhood who develop very serious disorders in adolescence, from the adolescents who present continuous disorders from their early years? Will the factors that explain the resilience of some children living in extreme adversity (Rutter, 1985) be the same as those factors that help children with early clinical problems throughout the whole population to overcome them? We need to understand better how normal variability in children, even when extreme, crosses certain limits, and turns into overt deviancies, at home or school, necessitating an intervention of different clinical and social services, usually at high cost for both individuals and societies.

Recent reviews of studies of the stability of temperament across childhood allow some conclusions to be drawn (McDevitt, 1986; Maziade *et al*, 1986*b*): (a) evidence exists that temperamental characteristics show some stability from birth to adulthood; however, (b) this stability increases greatly after the age of three; (c) stability seems more consistent when aggregations of traits or when a global definition of temperament are used, instead of separate temperamental dimensions or a narrow definition of temperament (Matheny *et al*, 1984), although this issue is still the subject of controversy; and (d) inquiries must now be directed at the nature of factors and circumstances that change temperament (McCall, 1986). Some studies have already indicated that the patterns of temperamental change in the first years of life might be partly determined by genes (Matheny, 1984). On the other hand, very little is yet known about specific environmental factors influencing temperamental change; research results indirectly argue for causative models in which some long-standing or sequential environmental influences trigger, according to the developmental phases, periodic changes that are themselves modulated by genes (Matheny & Dolan, 1975). Even less is known about the stability of dysfunctional interactions between family variables and temperamental characteristics on the one hand, and on the other, the transient or chronic decompensation of such dysfunctional processes into behavioural or developmental disorders.

Within this perspective, this study examined the following three questions. Is temperamental continuity from infancy to 4.7 years of age relatively increased when we study temperamentally extreme infants of the general population? Do the extremely difficult, easy, or average groups of infants present the same degree of change in the pre-school years? To what extent are environmental parameters, such as family functioning (behaviour control and communication), parental conflict, socio-economic status (SES), maternal mood, and stressful events associated with stability or change in temperament? We were especially interested in investigating the relationship between persistence or change of extreme temperament from infancy to 4.7 years of age and the appearance of clinical disorders at the latter age.

## Method

The sample, the instruments and the procedure are described by Maziade *et al* (1989 - this issue, pp. 535-543).

## Results

The number of subjects varies in the multivariate analyses, as some subjects could not have all the independent variables assessed. For family communication, we had to exclude the single-parent families ($n = 13$), because of the difficulty in such young families of assessing MMFF communication when one parent is absent. A principal-component analysis was run in the present sample ($n = 80$) on the nine category means at 4.7 years of age, on the tests, and also on the retests three weeks later: on both occasions, results showed that adaptability, approach/withdrawal, mood, intensity and distractibility were again the five categories loading most strongly on Factor 1 (loadings at the test respectively of 0.75, 0.68, 0.72, 0.66, 0.75), which explained 33% of the total variance. Since, as we have previously reported (Maziade *et al*, 1984*a*), these same five categories were those aggregating also on Factor 1 (PCA) in infancy, we characterised each subject by the average of his four-month and eight-month scores on Factor 1 in infancy, and by the average of his test and retest scores on Factor 1 at the age of four years.

### Association between temperament in infancy and at four

To look at the strength of the association between temperament in infancy and temperament at four years of age (Table I), we first calculated a correlation between the average factor scores in infancy and the average scores at four in the total sample, and found a significant association ($r = 0.30$; $P < 0.01$; $n = 80$). However, temperament seemed more stable in boys ($n = 50$; $r = 0.41$; $P = 0.002$) than in girls ($n = 30$; $r = 0.06$; NS). In a first analysis, the correlations in Table I also suggested that temperament changes more often in families with a higher level of communication and that it is more stable in families with a lower level of communication. Since we did not observe the same level of continuity in each sex, we looked at the correlates of temperament assessed at four years separately in boys and girls; partial correlations (partialling out for the effects of all other variables) showed that maternal mood was significantly associated with temperament at age four in both sexes ($r = 0.43$ in girls, $r = 0.51$ in boys), whereas temperament in infancy keeps a significant association with temperament at four years in boys ($r = 0.35$, $P < 0.05$), but not in girls ($r = 0.01$). No other variables were significantly associated with temperament assessed at four.

We then introduced the interactive effects between variables: since the data met all the necessary pre-conditions (homogeneity of the variance, normality of the residuals, and no strong multicolinearity between variables), we performed a stepwise multiple-regression analysis ($n = 78$). Results showed again, even while taking into account possible interactive effects, the main statistical effect on temperament at four years old was by maternal mood in step 1 and by infant temperament in step 2.

TABLE I

*Spearman correlation coefficients between temperament in infancy and temperament at four years in total sample and in different subsamples*

| | |
|---|---|
| In total sample ($n = 80$) | 0.30** |
| In boys ($n = 50$) | 0.41*** |
| In girls ($n = 30$) | 0.06 |
| In families with dysfunctional communication ($n = 37$) | 0.45*** |
| In families with superior communication ($n = 28$) | 0.02 |
| In absence of stressful events ($n = 40$) | 0.47*** |
| In presence of stressful events ($n = 39$) | 0.12 |
| In families with dysfunctional behaviour control ($n = 40$) | 0.29 |
| In families with superior behaviour control ($n = 39$) | 0.33* |
| In upper SES (Hollingshead I, II, III) ($n = 21$) | 0.38 |
| In lower SES (Hollingshead IV, V) ($n = 59$) | 0.29* |
| In presence of maternal depression ($n = 22$) | 0.38 |
| In absence of maternal depression ($n = 56$) | 0.32* |
| In single parent families ($n = 15$) | 0.45 |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.005$.

TABLE II

*Partial correlations between environmental factors and scores of temperament change in total sample, in positive or negative change separately, and in boys and girls separately*

| | *In total sample*[1] *(n = 64)* r | *For negative changes (n = 34)* r | *For positive changes (n = 30)* r | *In boys (n = 40)* r | *In girls (n = 24)* r |
|---|---|---|---|---|---|
| Family communication | 0.33* | 0.46* | −0.02 | 0.34* | 0.36 |
| Family behaviour control | −0.10 | 0.02 | −0.02 | −0.06 | −0.12 |
| Maternal depression | 0.05 | 0.34 | −0.28 | 0.06 | −0.16 |
| Stressful events | 0.33* | 0.31 | 0.56*** | 0.17 | 0.63*** |
| SES | 0.19 | 0.31 | −0.11 | 0.20 | 0.37 |
| Marital conflict | 0.15 | 0.23 | 0.15 | 0.22 | 0.19 |

An estimation of temperamental change is made by calculating the difference between the Studentised factor score in infancy and the Studentised factor score at four years.

1. Family communication is included in the partialling-out procedure, and single-parent families are excluded because of the difficulty in assessing MMFF communication in such young families when one parent is absent.

*$P<0.05$, **$P<0.01$, ***$P<0.005$.

**Effects on changes in temperament**

We calculated a score of change in temperament. Because of the mathematical necessity of the specific analyses, two approaches were used. (a) For the correlations, the subjects were ranked in infancy and at four years of age according to their scores of temperament factor, and for each subject a difference of rank (rank in infancy minus rank at four) was calculated. (b) For the other multivariate analyses, a difference between the Studentised factor scores in infancy and at four years old was calculated for each subject. Thus a higher difference corresponds to a greater change. The distribution of change scores was relatively symmetrical – as much positive as negative change was observable. We first performed partial correlations (partialling out for the effect of all other variables) between each environmental variable and this change score in absolute value.

Table II illustrates that, as expected from the results in Table I, family communication and stressful events present, in the whole sample ($n=64$), a significant association with change: higher levels of communication (partial $r=0.33$, $P<0.05$) and stress (partial $r=0.33$, $P<0.05$), are associated with more change. Table II further shows that stressful events are associated with change only in girls. To investigate further possible statistical effects on the direction (positive or negative) of change in temperament from infancy to the age of four, we analysed separately those subjects characterised by a negative change score (change towards the difficult pole of the factor) and those characterised by a positive change (towards the easy pole). Strikingly, the correlational patterns appeared different for negative and positive changes (Table II): for instance, the level of family communication is significantly correlated with negative change (more negative change in families with a high level of communication), but not with positive change.

To uncover a possible strong interactive effect between variables that might influence the change scores, we tried to run a stepwise multiple-regression analysis. Because of the previous findings, we decided to analyse positive and negative change separately. The raw data for change scores did not meet all the mathematical assumptions required to perform a stepwise multiple-regression analysis. However, using the square root of the change scores provided enough homogeneity of the variance and satisfactory qualities in the residuals; all the variables and interactions were entered into the analysis. For negative change ($n=34$), we found in step 1 that an interaction between family communication and SES (partial $R^2=0.21$, $F=8.70$, $P=0.006$), followed in step 2 by an interaction between stressful events and maternal mood (partial $R^2=0.10$, $F=4.49$, $P=0.04$) predicted negative change better than family communication alone. Additionally, a multiple-regression analysis including only the communication and SES main effects as well as the communication–SES interaction, indicated that when the interaction is entered, neither SES nor communication adds significantly to the explained variance. The stepwise analysis picks up in step 1 the strongest simple association with the dependent variable, the communication–SES interaction correlating most with the negative change score ($R^2=0.21$, $F=8.70$, $P=0.006$). However, the communication–maternal-depression interaction presented a very close second-best simple association ($R^2=0.19$, $F=7.46$, $P=0.01$) in step 1 (only 2% of difference in explained variance).

Because of the tight link observed in these young mothers between anxious–depressive mood and working-class status (Maziade *et al*, 1989 – part I, this issue) as in other samples of a general population (Brown *et al*, 1975), we wanted to examine whether these two interactions had a separate effect or not. A multiple regression, in which only the two interaction terms (communication–SES, and communication–maternal mood) were entered, indicated that each interaction had a separate effect on the variance. A multiple-regression analysis in which maternal mood, communication and the maternal-mood–communication interaction were entered, also showed that only the interaction adds significantly to the variance. When we additionally entered IQ in the previous multivariate analyses, this did not change the results.

As regards positive change ($n=30$), a logarithmic transformation of the raw change scores was needed in order to meet the mathematical requirements of a stepwise multiple-regression analysis, and thus make the results interpretable. All the variables and all possible interactions were entered into the analysis. The model that was found to be most predictive of positive change included firstly a sex–stressful-events interaction (partial $R^2=0.25$, $F=9.52$, $P=0.005$); consistent with the correlations in Tables I and II, stressful circumstances in girls are associated with positive temperamental change. A multiple-regression analysis in which sex, stressful events, and the sex–stressful-events interaction were entered, showed that when the interaction is entered first, stresses or sex alone do not add to the explained variance.

Given the persistence of extreme temperament at four and eight months, we examined whether the group of extremely difficult infants would not be more resistant to change than the others. Our data indicate that the temperamentally difficult, easy, and average infant groups display the same degree of change up to the age of four (Kruskal–Wallis analysis of variance (ANOVA) comparing the three groups on their change scores in absolute value; $\chi^2=0.54$, d.f. $=2$, $P=0.76$; $n=80$), and the results remain non-significant, regardless of sex or SES. We also observed that the presence of clinical behavioural disorders at 4.7 years old is not strongly associated with temperamental change itself: compared with normal children the disordered had a slight, but statistically non-significant, tendency to present more temperament change (Kruskal–Wallis ANOVA, $\chi^2=2.71$, d.f. $=1$, $P=0.10$).

### Temperament and the development of disorders

Among the 26 difficult infants, as many (65%) developed clinical problems in those changing their temperament position as in those remaining extremely difficult at four (56%) (Table III). Conversely, among the extremely difficult infants remaining temperamentally difficult at four years old, almost half did not develop disorders. The only possible relationship between continuity of temperament and appearance of clinical disorders seems to be a very low rate of disorders in the group of easiest infants who remain extremely easy at four. When other cut-off points on the temperament distribution were used, all these observations were similar.

### Summary of results

Boys showed more temperamental stability throughout pre-school years. Change was more associated with a high level of family communication and with stressful circumstances, although negative and positive change respectively did not display the same correlates: children changed more negatively in families having both a low SES and a high level of communication (or in families having both a depressive mother and a high level of communication). Girls changed more positively in a family environment including stressful events. Extremeness of temperament, even though persistent in infancy, can change greatly up to four years of age, and the extremely difficult, the easiest, and the average infants displayed about the same extent of change. Both the change and continuity in temperament appeared relatively unassociated with clinical outcome at four, except for a possible tendency for extremely easy infants who remained extremely easy at four to develop few clinical problems; even persistent extremeness of difficult temperament up to the age of four was not automatically related in our sample to the presence of a clinical disorder.

TABLE III

*Continuity of easy–difficult temperament (Factor 1 on PCA) from infancy to 4.7 years of age* ($n=80$)

| *Temperament in infancy* | *Temperament at four years*[1] | | | | | |
|---|---|---|---|---|---|---|
| | *Difficult (⩽25th)* | | *Average (25–75th)* | | *Easy (⩾75th)* | |
| | *Boys* | *Girls* | *Boys* | *Girls* | *Boys* | *Girls* |
| Difficult | 6 | 3 | 9 | 4 | 1 | 3 |
| Average | 4 | 3 | 8 | 5 | 5 | 2 |
| Easy | 1 | 3 | 8 | 5 | 8 | 2 |

1. Utilisation of other cut-off points on the centile distribution yielded similar results.

## Discussion

### Stability of temperament over years

Concerning the first research question, our data clearly indicate that the degree of stability in temperament from infancy to 4.7 years of age is not increased when we look at infants who have been persistently extreme of temperament at both four and eight months of age, and where extremes were selected from a large random sample of the general population; the correlations between temperament in infancy and at 4.7 years old (~0.40) are similar to those found in many previous studies using subjects of the whole population (see McDevitt, 1986; Maziade *et al*, 1986*b*). Even taking into account the imperfect reliability of the current measuring devices, our results again demonstrate that much more change than stability is observable from infancy to the pre-school years.

### *Sex differences*

It was striking that the degree of continuity or change in temperament during the early years for extreme infants was different according to sex: considering the effects of all other environmental variables assessed, it was only in boys that temperament in infancy was significantly associated with temperament at the age of four. Few previous studies on stability of temperament have considered the issue of sex differences in terms of patterns of stability and change, or have not found any; it is also possible that our selecting extremes in temperament permitted the uncovering of such sex differences. In addition to finding that girls change more from infancy to four years old, we observed that girls are more prone to positive temperamental change in families that have lived through stressful circumstances in the past year.

Is it possible to integrate these results with those of previous research, in order to obtain a perspective that would provide directions for future epidemiological studies? We believe so. Other studies have clearly indicated that in middle- and upper-class families, the same qualities may elicit different parental attitudes according to the child's sex (Martin *et al*, 1981), and can be associated with different social interactions (Stevenson-Hinde & Hinde, 1986): for instance, shyness in boys would not provoke the same social interactions with peers and adults as shyness in girls. Conversely, it is probable that parents' expectancies or shaping, with regard to the way their children react, are also different according to sex (Maccoby & Jacklin, 1980). Some empirical evidence suggests that in the early years, characteristics in girls are more associated with parameters in the environment than those in boys (Stevenson-Hinde & Hinde, 1986; Keating & Manning, 1974), although boys react with more behavioural problems than girls to parental discord (Emery & O'Leary, 1982; Earls & Jung, 1987). Cameron (1977) also reported on the NYLS children that at age four and five, most of the significant associations between temperamental traits and family variables were for girls. Therefore, it could be understandable that girls in our sample were more prone than boys to changing their temperament under the effect of environmental influences.

Previous evidence has already indicated that girls show a general positive trend in temperamental change throughout childhood, while boys show a more negative or undesirable temperamental drift over the years, even up to adulthood. We have already reported that the 1:1 sex ratio for infants of extreme difficult temperament (Maziade *et al*, 1984*b*) changes to a 2:1 boy:girl ratio at the age of seven (Maziade *et al*, 1984*a*). Thus, these epidemiological data had already indicated that boys in the general population were more prone to become temperamentally difficult over the years, or conversely that girls were more prone to become easier. Similar tendencies can also be identified in a report on the NYLS children (Korn, 1984); when taking the subjects in the two extreme quartiles on the easy–difficult cluster, Korn observed a clear pattern in which the position of girls (not boys) in the easy quartile in the pre-school years predicted their position in the easy quartile as young adults, whereas boys (but not girls) who were early in the difficult quartile remained more in the difficult quartile in young adulthood. All these data could indicate a longitudinal preponderance of a continuous influence towards change (which does not preclude the existence of other sequential or phasic influences across the years) that differentiates sex. Since data now demonstrate that extreme difficult temperament overlaps only slightly with clinical disorders, and given such a striking sex difference in the prevalence of disorders throughout childhood, longitudinal study of temperament and the development of clinical disorders, comparatively in boys and girls, seems promising in terms of the knowledge it can provide for future preventive and clinical purposes.

### *Population and individual change*

Some discussion is also warranted about change and stability on the NYLS easy–difficult cluster. We have already demonstrated the consistent presence in random samples of our population in infancy and at seven of a first factor, derived from a principal-component analysis and composed mainly of the same five traits (the only difference with the NYLS easy–difficult typology being the substitution of rhythmicity by distractibility) (Maziade *et al*, 1984*a*,*b*, 1986*a*). Thus this typology seems stable across different ages in the population, but the present data indicate that sizeable individual change occurs in both directions along this bipolar axis, in about the same proportion. Boys' temperament seems more stable than girls' on this axis, and monozygotic twins present more similar patterns of change than dizygotic (Matheny, 1984). It is as if this bipolar factor is a phenomenological axis, with some genetic substratum, along which children slide as much in one direction as in the other but, most interestingly, in which it is not contrary values of the same environmental forces, but rather forces that are different that push in opposite temperamental directions. To understand better the seemingly paradoxical instability of this factor in individuals, in comparison with its stability in the population, we must now search for a physiological basis for this temperamental factor. There is a need to track longitudinally the biological marker, as well as the temperamental phenomenology and the appearance of disorders.

## Environmental correlates of negative and positive change

The environmental correlates of negative change are not the same as those of positive change.

Even considering that correlations do not point necessarily to causal processes, the observed correlational patterns suggest that the mechanisms leading to the one are different from those producing the other. We found that girls are more prone to acquire easier traits when there are stressful circumstances in the family, while both boys and girls are more prone to become more difficult (i.e. less adaptable, more withdrawing, etc.) in families of lower SES (or families with an anxious–depressive mother) also presenting a high level of communication. It is plausible that a family combining an anxious or sad mother (or more burdened parents in the manual classes) with a better expression of emotions, facilitates parent–child interactions in which negative affects, like frustration and anxiety, are shown. This might in turn favour in the long run a predisposed child to become more intense, more negative in mood, less adaptable, and more prone to withdrawal. However, this speculation, indirectly suggested by our exploratory study, must be subjected to empirical testing.

### *Intervention*

Our present data on these extreme infants jeopardise the ideas of those who value large-scale, community-based, early identification of temperamentally difficult infants for preventive purposes. Such costly community programmes would fall short on two empirical technical points: the target population, and the specific preventive techniques to be used. The majority of our extremely and persistently difficult subjects in infancy lost – without professional intervention – their undesirable traits by four and a half years of age. and at present we possess no means of early identification of temperamentally adverse infants who will remain so, nor of the other large number who will become temperamentally adverse in pre-school years. Moreover, what specific abilities should we teach parents for helping their infants to become less intense, more adaptable, and having a more positive mood? Because so much change is operative in the first years, and because difficult or easy temperament assessed before the age of four is not in itself very predictive of later adjustment (Thomas & Chess, 1986; Maziade *et al*, 1989, Part I, this issue), the evidence would suggest that large-scale screenings based mainly on adverse temperament should be delayed until characteristics in the child or in parent–child interactions are more stable, at around four or five years of age.

### **Persistent extreme temperament and appearance of disorders**

Just as our previous results showed between the ages of 7 and 12 (Maziade *et al*, 1986*b*), the present data show that extreme adverse temperament that persists from infancy to age 4.7 is not equivalent to the presence of clinical disorder, contrary to some suggestions (Stevenson & Graham, 1982; Ferguson & Rapoport, 1983). The data rather suggest that a difficult temperament is significantly but partially associated with the appearance of disorders; the risk of disorders seems increased, especially in middle childhood, if the family is dysfunctional in terms of controlling behaviour (Maziade *et al*, 1985).

Secondly, the environmental correlates of temperamental negative change until the age of four do not correspond to the correlates of clinical disorders in that period (Maziade *et al*, 1989, Part I, this issue), and this suggests that the causal mechanisms implicated in temperamental change towards the difficult pole are not fully superposable to those involved in the genesis of clinical behavioural disorders. Dysfunctional parental control and discipline, along a process already discussed (Maziade *et al*, 1989, Part I, this issue), seem more involved in the genesis of disorders in temperamentally difficult children, whereas anxiety and depression in the mother, associated with a high level of family communication, would be more implicated in change towards a difficult temperament in the early years. The next follow-up study on these children and families might elucidate such processes.

The differences in trajectory of change are striking in our sample; some children go from the extremely easy pole, and effect enormous change towards the difficult pole. Others improved their temperamental traits dramatically. Since difficult temperament by the age of four, and later is partially but significantly associated to psychiatric disorders (Thomas & Chess, 1986; Earls & Jung, 1987; Maziade *et al*, 1985, 1989, Part I, this issue), our data call for further comparative study of the disordered pre-school children who are temperamentally difficult, and who were so in infancy, with those disordered and temperamentally difficult who were of easy temperament in infancy. The present data tend to indicate that the processes causing the disorders might not be similar in these two groups. If the direction of change should be more stable in time and predictive of later adjustment, this might be because of a progressive longitudinal stabilisation of parent–child interactive reinforcements and feedbacks.

As researchers and clinicians, studying extreme characteristics selected from a random sample made us acutely aware of the young child's plasticity and propensity to change. This may lead one to two opposed conceptual directions for future inquiries. One would focus on novel and uninvestigated qualities in the child that would show more stability in the first years of life: this occasions the risk of abandoning too soon the idea of stable patterns in the early years that are of importance for later adjustment. The other direction would be to try now to identify stability in specific interactive child-family processes; despite its more arduous methodology, this might be more rewarding in the long run.

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# Capgras' Syndrome and Folie à Deux Involving Mother and Child

J. HART and G. M. G. McCLURE

A mother and her son shared delusional beliefs that doubles of themselves existed and that they were being harassed by the police and social and educational services. The nature of these 'double double' symptoms is discussed.

## Capgras' syndrome and the experience of a 'double'

A belief in the existence of doubles may involve a variety of experiences. The experience of autoscopy involves more than a visual recognition, in that the patient feels that the perceived individual is actually himself. It may involve hallucinatory experiences or the illusory distortion of another person viewed (Gerstmann, 1958). This type of experience does not involve the concept of replacement found in the Capgras' syndrome, reviewed by Berson (1983), where the patient is aware of non-existent differences within another individual which make him think that this person has been replaced by a double. As first described by Capgras & Reboul-Lachaux (1923), the patient thinks that someone close to him, spouse, parent or sibling, has been replaced by a double with some kind of persecutory function. The experience can spread to involve other family members or medical staff and may be accompanied by a belief in the existence of a double of the self. It involves a consistent misidentification, in clear consciousness, which produces perplexity, although generally perception is not false or distorted. It has been proposed that ambivalent feelings are provoked by the object and that negative feelings may be released only by transforming this object into a persecutor. It may be an externalised experience similar to depersonalisation (where feelings of the self become distorted), giving the impression of change in qualities of the object. The search for an organic basis for the symptoms has produced equivocal results.

A range of related experiences includes the illusion of Fregoli, in which one persecutor appears to be presenting himself as a variety of people near to or in contact with the patient. Here the patient imagines similarities. In such cases the central issue is one of substitution and not merely the existence of doubles.

## Folie à deux

Since the report by Primrose in 1635, reports have been published of cases where symptoms of mental illness seem to have been passed from one person to another. This phenomenon has been extensively reviewed by Enoch & Trethowan (1979) and Gralnick (1942), and it can occur in four ways. In folie imposée, which is the most common, the symptoms of a dominant active individual are adopted by a submissive suggestible one. With folie simultanèe, two patients predisposed to psychosis who are very close develop symptoms at the same time, and neither party seems dominant. In folie communiquée, two predisposed patients develop a psychosis, but with a time interval between them, and the two illnesses take on their own characteristics. With the last type, folie induite, two patients with pre-existing psychoses adopt part of each other's delusional material to enrich each other's symptoms. This is very rare.

Folie à deux is more common in a setting of poverty where the individuals are together over a long period, and when the inducer represents authority to the other. The inducer must be in the early stages of illness (and in touch with reality enough to influence the other), and the secondary individual must derive some gain from adopting the symptoms. Although it most often occurs between elderly, isolated siblings, it is well recognised within other close relationships, particularly mother–child. It is also reported involving whole families. The majority of cases involve members of one family and generally there is a dominant–submissive relationship. Usually the experience has a paranoid element. Gralnick (1942) claims that the underlying process is one of identification by the submissive party, which may be unconscious. It may represent an attempt to maintain a close relationship, the dominant party striving to maintain a link with reality, while the other fulfils dependency needs. It has also been viewed in terms of maladaptive learning. The possible interaction of genetic and environmental factors has been reviewed by Lazarus (1986).

## The association between mental illness in parent and child

The association between parental mental illness and disturbance in children is well recognised (Rutter, 1966; Weissman *et al*, 1984; Cytryn *et al*, 1984). In general, there is a lack of specificity between the form of mental disturbance in the parent and that in the child (Quinton & Rutter, 1984). Clearly, only a minority of children of psychotic parents develop psychosis, and even if this does occur it is not necessarily in the same form as the parental condition (Kauffman *et al*, 1979). Signer & Isbister (1987) reported a case in which a child shared his mother's persecutory beliefs, but not her experience of doubles. Mander *et al* (1987) report the case of a child who agreed with the mother's paranoid belief when interviewed with her, but not when the child was interviewed alone. Anthony (1969) states that the conviction with which a delusion is held varies between children, although in any one case it depends on the presence or absence of the deluded parent or reality-orientated figures. A substantial relationship with a normal adult may act as a protective factor (Rutter, 1971).

## Case report

John A., aged ten, had been kept away from school for almost a year as his mother, with whom he lived alone, felt there was a school culture of violence. She said that staff were being punitive towards him, and other children were using flick-knives in the playground. She had started to accompany her son into school but was abusive to staff and had been refused access. When his attendance ceased, the mother claimed that his education had been very poor and that she could teach him all that he would need to know, much more effectively, at home. When questioned by the education social worker, she claimed that all the authorities were acting illegally and she threatened legal action in the European Court of Human Rights.

Mrs A. believed that a mother and son lived above them who were identical to them in appearance, although opposite in behaviour. This pair had the same surname spelt differently, and so were easily confused. The imagined mother was stern and cruel and the boy very naughty; they stole their post. John accepted all of these ideas and said that he had heard this couple shouting and he had seen them and passed them on the stairs. He was worried that they would cause him and his mother trouble, and clung to his mother, not wanting to separate from her. The only other person with whom he had regular contact was his father, whom he saw several times a week, for a few hours.

Fearing intervention by outside agencies, the mother became very hostile, believing that her social worker was following her around on a motor-bike, with a police escort. Some of her fears became self-fulfilling, as John had to be taken into care, because there were concerns about impairment of his development. The mother remained very hostile and uncooperative, with florid persecutory delusions, threatening litigation in long, pseudolegalistic letters.

John settled rapidly into a children's home, referring to the doubles and persecution by social workers less and less. The abnormal beliefs which he showed with his mother had completely disappeared after one week, and had not returned at follow-up one year later. His mother refused all help and treatment, and continued to experience her paranoid symptoms. In view of the persistence of the mother's condition, and the difficulty in persuading her to accept treatment, John was recommended for long-term fostering.

## Discussion

In this case we find the coexistence of two unusual phenomena involving doubles. Doubles are experienced *by* both mother and child *of* both mother and child: a kind of double/double. The mother's experience of seeing the doubles could have been hallucinatory, or an illusory misidentification of real individuals, or the whole experience could have been delusional. As the mother expressed no surprise at seeing the doubles, it suggests that the experience was delusional rather than hallucinatory, and was secondary to the mother's paranoid illness. The mother's dominant manner and role as sole educator, coupled with her psychotic ideas, encouraged the development of folie à deux. Through suggestion and identification with the mother in a socially isolated setting, there is an acceptance that what happens to her can and does happen to a child. The child was overexposed to the mother's pathology, as there was no substantial relationship with any other adult, which could have been a protective factor. Developmentally, the child was too immature cognitively and emotionally to resist his mother's influence by independent reality testing.

If the conditions for transmitting symptoms are established, vulnerable children are at risk of adopting delusional ideas, and accepting accounts of psychotic experiences. This child, though rigidly accepting his mother's persecutory ideas, was able to separate from them when his mother's influence was removed and contact established with other adults.

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# Epilepsy and Arson

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A man temporarily developed an organic personality change, psychosis and epilepsy after a frontal lobe operation for a subarachnoid haemorrhage. While affected, he set fire to his house. The arson is thought to have been a direct result of a seizure. The case and its legal management are discussed.

Although the legal and psychiatric status of epileptic automatism has provoked much comment (Fenton, 1972; Blair, 1977; Pincus, 1981; Brahams, 1983; Fenwick *et al*, 1984; Hamilton, 1984, 1986), case reports remain rare (Knox, 1968; Gunn & Fenton, 1971; Gunn, 1978; Cope & Donovan, 1979; Delgado-Escueta *et al*, 1981). We report a case of arson that was probably a direct result of an epileptic seizure.

## Case report

AB, born in 1947 in Co. Durham, left school at the age of 15 to become a coalminer. He married in 1968, and his only child, a daughter, was born within a year. He was happily married, and was locally popular, owing to his sociable, bubbly personality. There was no personal or family history of epilepsy, psychiatric illness, alcohol abuse or criminal conviction.

In 1983 he collapsed at work after hitting his head. He was admitted to hospital, and a subarachnoid haemorrhage from a leaking berry aneurysm of the anterior communicating artery diagnosed. A right frontal craniotomy was performed, the artery clipped and the damaged tip of the right frontal lobe removed. After recovering from the initial delirium he was discharged home on steroids, which were stopped after a month, after which he was free of medication.

For six months he hallucinated, seeing imaginary insects, and feeling them crawling on his skin. He became inert, unsociable, intolerant of noise, and irritable. He started to swear. He took a disliking to his daughter, whom he had previously adored, and would push her out of the house. These changes became less severe in the year following the operation, but he remained cool towards his family, quieter and less spontaneous. He now went out for a drink only occasionally, and often left the pub early. After nine months he returned to work at the mine, initially only on the surface, but later undertaking light work underground.

His wife and daughter complained of his temper. He would suddenly, without warning or obvious provocation, become very angry, and had, for example, got up while watching television and broken a light fitting, thrown crockery on the floor when he was washing up, and run outside and thrown a stone down the garden. After about a minute, he would resume what he was doing as though nothing had happened. When later questioned by a psychiatrist, AB described being in a state of derealisation during these episodes. At times he experienced strange smells and tastes, and his wife described how he would lick his lips, chew and suck, presumably to appreciate the oddly familiar sensations. These tastes often heralded transient states of derealisation and violence. His wife complained of his tempers and irritability to his doctors, but they explained that nothing could be done to improve things. AB did not feel that anything was wrong with him.

Twelve months after the operation, he visited the pub where his wife worked, and there drank two or three pints of beer. He recalls then arguing with his wife and leaving. His wife and other patrons recalled no argument, although certainly he left suddenly and unexpectedly. He took one hour to walk the five-minute distance to his house, where his daughter was already home. He still cannot remember this walk. At home he was restless, watching television but repeatedly looking out of the window. Soon after his wife arrived he became more agitated, went to the fire, and shovelled the burning coals around the living room. He pushed his family out of the house but remained within, standing in the burning room as though dazed. AB recalls feeling distant and derealised throughout. He left later by the back door, and drove off, returning after about 20 minutes, when he was arrested and charged with arson. He could give no reason for his actions, and for several weeks did not appear to appreciate fully the damage that he had done.

The local psychiatric hospital refused admission and he was remanded in prison. Here he showed transient altered states of consciousness. A diagnosis of partial complex seizures was made. An EEG was highly abnormal, with numerous paroxysmal features. He was placed on carbamazepine, and reported a marked reduction in his 'dream states'. Soon after this his spontaneity improved, and his old fond feelings for his family returned. His relatives reported a nearly complete return to how he was before the injury, although he remained slightly quieter. After a few months the carbamazepine was stopped with no deleterious effects. After his trial, he was transferred to a non-secure psychiatric hospital for a brief period of further observation and industrial rehabilitation.

When in hospital, repeated mental state examinations and observations showed no mental abnormality. He was an eager, skilled, hard worker. He was discharged home, where for the last three years he was remained well, with no further seizures or violence. He has regained his driving licence and has stopped working as a coalminer. He now helps to run a voluntary organisation. A repeat EEG performed two years after discharge was normal, apart from occasional generalised slow waves.

## Discussion

This case has both psychiatric and legal interest.

In retrospect and with detailed questioning, there is a good history of an organic psychosis and personality change secondary to the brain trauma from the subarachnoid haemorrhage and operation. Both the psychosis and personality change slowly improved over the year. His olfactory and gustatory hallucinations or aura, with transient states of derealisation and purposeless violence, combined with the evidence of the EEG, make it probable that he was suffering from partial complex seizures.

Several of the features surrounding the index offence point to it being part of a complex partial seizure: the confused behaviour and impaired memory before reaching home; the agitation and restlessness at home, the altered state of consciousness during the shovelling of the coals; the staring expression and the lack of purposeful activity afterwards. In this case there was no amnesia for the shovelling, although there was no recall of the period beforehand. Fenton (1972) considers that for a behaviour to be an automatism, there should be total amnesia for the event. This opinion is supported by the cases reported by Delgado-Escueta *et al* (1981), but these cases were highly selected and the diagnostic criteria for automatism left unclear (Pincus, 1981). Knox (1968) cites three patients who had partial awareness of their behaviour during automatisms.

In the case of AB, it is impossible to decide whether the fire setting occurred during a seizure, or during the confused post-ictal period. If the latter, his limited awareness would still legally make this a case of automatism (Mason, 1983).

Alternatively, a hysterical dissociative state is suggested by the derealisation and the car drive immediately afterwards, AB driving around and then returning home. But this drive is also compatible with a post-seizure fugue state.

The main alternative diagnosis is that of an episodic dyscontrol syndrome, but the EEG showed focal discharges, and the aura, the total lack of apparent triggers, the sudden onset and equally sudden cessation of many of his outbursts, all favour an epileptic explanation for his behaviour.

The role of alcohol in precipitating this fire setting is unclear. Since his brain trauma, he several times had drunk more alcohol and over a shorter period of time, than he had on the night of the fire. These other sessions of drinking had not precipitated a seizure, nor behaviour suggesting pathological drunkenness, or violence. His drinking behaviour was not that of an alcoholic. He drank infrequently, drank fairly little during each session, and showed no reluctance to stop drinking. However, because of the temporal association between alcohol and the arson episode, it was felt wise to advise him not to drink, and he followed this advice after he was discharged.

Legally, several strategies were available for AB. He was advised not to enter a plea of automatism, as the case of Sullivan confirmed that epileptic automatism is to be treated as insane automatism, which would result in a special verdict of not guilty by reason of insanity. The special verdict would result in his detention in hospital for an indeterminate period, although a mental health review tribunal might discharge him from hospital (Hamilton, 1984). The prosecution argued that he had a "psychopathic disorder" (within the meaning of the Mental Health Act). They pressed for admission to a secure hospital under a hospital order. They argued that the organic damage had made him unreliable in abstaining from alcohol and in following treatment. This view was supported by both a forensic psychiatrist and a prison doctor.

At trial, the defendant pleaded guilty, and submitted medical reports that stated that he was mentally disordered at the time of the offence, but that he was now no longer mentally disordered and was fit to be further assessed out of a secure setting. A bed in a local hospital was offered for this further assessment. The judge accepted that the defendant had substantially recovered and discharged him, unconditionally. Surprisingly, he did not make a probation order, with medical treatment a condition of probation, but the defendant proved to be a pleasant and co-operative man who was keen to end his personal nightmare and to start to rebuild his life.

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# Altered State of Consciousness in a Compulsive Water Drinker

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A relatively normal 16-year-old Chinese woman with a six-month history of compulsive water drinking resulting in a comatose state is reported. The drinking was perpetuated by an enjoyable altered state of consciousness after ingestion of an average of 20 litres of water per day. Treatment by fluid restriction and, later, simple education was successful. The subjective dimension of an altered state of consciousness may provide an important explanation for the obscure aetiology.

Although the physical mechanisms underlying water intoxication have been described (Goldman *et al*, 1988), the associated psychopathology in compulsive water drinkers remains less well understood. Vieweg *et al* (1985*a*) listed ten non-specific terms for the phenomenon, and emphasised its aetiological obscurity. We report an adolescent woman whose water drinking, which led to a coma, was related to her seeking an altered state of consciousness (ASC).

## Case report

A 16-year-old Chinese woman with good past health was admitted for a sudden loss of consciousness. The second of three children in a relatively normal, working-class family, she had had an uneventful childhood and was described as a 'lovely-looking' child. Six months previously she had left school as an average student, and went to work as an office clerk. She found the job boring, felt lonely at times, especially after the marriage and departure of her eldest sister, and kept most feelings to herself. She became sensitive about her mild amount of facial acne and frequently urged her mother to cook her more 'cold' food to balance her excessive 'hot' energy that was believed to cause the acne and occasional moodiness. Six months previous to the coma, she started drinking increasing amounts of water (usually cooled distilled water) to 'cool' herself. The average intake was estimated to be 20 litres a day. A large proportion of this was taken in a short time, so as to achieve a more 'forceful' effect. Despite the discomfort of the resulting abdominal bloating, diarrhoea, nausea and sometimes vomiting, she experienced enjoyable feelings of being "a little dizzy, funny and high, like after a beer", which enabled her to fall asleep easily. The water drinking persisted as a habit, despite the complete disappearance of the acne. There was no history of substance abuse.

On the day of admission, she had consulted a general practitioner for vomiting but was said to have no special problem. She returned from work as usual at 6 p.m., and drank more water in order to sleep well, but at 6.30 p.m. she was found to be unarousable and was taken to the hospital. The patient was in an afebrile coma with no abnormal signs. Urgent laboratory investigations gave the following results: plasma Na 117 (normal range 134–145) mmol/l, K 3.2 (3.5–5.1) mmol/l, urea 2 (3.4–8.9) mmol/l, creatinine 57 (44–107) μmol/l, plasma osmolality 242 (275–295) mosm/kg with simultaneous urine osmolality 236 mosm/kg, and spot urine Na 53 mmol/l and K 23 mmol/l. She passed copious amounts of dilute urine of specific gravity persistently <1.008. All other blood tests, as well as computerised tomography of the brain, were normal. On fluid restriction alone, she regained conscious-ness when the plasma Na and osmolality returned to normal, a few days later. Psychiatric assessment showed her to be essentially normal. She readily admitted to the 'addictive' water drinking and expressed ignorance of the risks involved. Over the next six months she managed to drink in moderation (<1.5 litres a day), and plasma Na and K levels kept within normal limits. She had also started to chew gum, and coped well both at work and socially.

## Discussion

Compulsive water drinking is believed to occur almost exclusively in psychiatric patients (Chinn, 1974; Jose & Perez-Cruet, 1979) and over 85% of cases of water intoxication are related to schizophrenia or affective psychosis (Zubenko, 1987). A group of idiopathic uncomplicated compulsive water drinkers will usually comprise about 80% female neurotics, and some subjects with no psychopathology (Barlow & De Wardener, 1959; Chinn, 1974). Some cases are triggered in mentally normal individuals because of toothache (Pickering & Hogan, 1971), medical advice to treat nephrolithiasis (Berry *et al*, 1977), and an unsatisfied urge to defecate (Swanson & Iseri, 1958). Our patient did not have psychiatric disorder. This is supported by her satisfactory termination of this potentially fatal habit (Vieweg *et al*, 1985*b*) after simple explanation, because compulsive water drinking is usually described as "extremely difficult to treat" (Noonah & Ananth, 1977).

Rowntree (1923) wrote that "Nature has provided adequately against water intoxication. . . . the sensation of satiation following the ingestion of small or moderate quantities of water renders the subsequent ingestion of large amounts increasingly difficult." Apparently, physical discomforts did not reduce our patient's endurance in water drinking.

In the traditional Chinese health system, all foods are classified into gradients of possessing 'hot' (*yang*) or 'cold' (*yin*) energy, and health is achieved by balancing these energies (Koo, 1984). Water is believed to be mildly 'cooling', and therefore much less deleterious to health than a 'very cold' food such as water melon. If taken in large amounts, water is believed to be a good remedy for diseases due to an excess of 'hot' energy. The patient's wish to rid herself of the acne (a symptom of excess 'hot' energy) apparently initiated the drinking process. The symptoms of intoxication (bloating, nausea, vomiting and diarrhoea) coincided with symptoms typically attributed to cold-excess (Koo, 1984) and encouraged the patient that it was the right therapy for her acne. Over time, however, she became 'addicted' to the 'high', which also helped to calm her mood and frustrations before she went to sleep. Her wish to 'cool' herself is culturally understandable and very different from frequently reported cases where polydipsia is based on a delusional need for cleansing (Smith & Clark, 1980; Singh *et al*, 1985).

The choice of distilled water is especially risky in terms of the development of hyponatraemia. It appears that she was seeking an ASC, which has been defined as:

> "any mental state(s), induced by various physiological, psychological, or pharmacological manoeuvers or agents, which can be recognised subjectively by the individual himself as representing a sufficient deviation in subjective experience or psychological functioning from certain general

norms of that individual during alert, waking consciousness." (Ludwig, 1966)

To our knowledge, the use of water to induce an ASC has not been reported before. Classic descriptions of water intoxication have not mentioned dizziness or ASC as possible symptoms (Rowntree, 1923), although Barlow & De Wardener (1959) recorded "a feeling of unreality" and the development of "a hysterical fugue" in their Patient 2. According to Ludwig's (1966) scheme, water as an agent to induce an ASC would fall under 'somatopsychological factors" (narcotics, psychedelics and dehydration but not overhydration were quoted as examples) which alter body chemistry and frequently bring about an ASC in a maladaptive way to "resolve emotional conflicts" or "defend against anxiety over an ugly look". Vieweg *et al* (1985*a*) noted that compulsive water drinking could be a response to increased levels of transmitter substances accumulating in the limbic system in periods of frustration, and raised the interesting possibility that compulsive drinkers seek to enhance opiate receptor effect by decreasing surrounding sodium concentration. (Interestingly, Patient 4 reported by Barlow & De Wardener (1959) was addicted to morphia.) The patient's new habit of chewing gum seems to be not only a substitute activity but also fits in with the hypothesis that compulsive water drinkers seek to satisfy an oral need (Singh *et al*, 1985).

Water intoxication is said to occur only in those individuals with impaired ability to excrete a maximally dilute urine, as water homeostasis is robust in normal individuals, who can handle up to 30 litres of water intake per day (Zubenko, 1987). The simultaneous urine and plasma Na and osmolality of the patient also suggested a degree of SIADH (syndrome of inappropriate ADH secretion). Reported cases of intoxication may represent the tip of an iceberg of compulsive drinkers, some of whom are mentally normal individuals whose prognosis is likely to be much better than the 50% recurrence rate quoted for psychiatric patients (Smith & Clark, 1980).

Singh *et al* (1985) indicated without elaboration that water must presumably fulfil some psychological need if dependence on it occurs. Barlow & De Wardener (1959) wrote: "If fluid was not accessible most patients became agitated, except during the fluid deprivation test". This seems to imply a primarily psychological rather than physical dependence. Water is generally regarded as a harmless natural substance that is more readily available than any substance of abuse. The seeking of an ASC could provide the missing aetiological link in a proportion of compulsive drinkers who may or may not be psychiatrically disturbed. Further investigation is suggested.

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# Psychotic Illness Following Termination of Pregnancy

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A case of a psychotic illness following an induced termination of pregnancy is described; this is discussed in relation to the literature on the subject, and possible aetiological factors in the case are reviewed.

The incidence of adverse psychological sequelae following induced termination of pregnancy is remarkably small (Pare & Raven, 1970; Greer, 1976). According to Lask (1975), factors putting patients at risk of an 'unfavourable' outcome include a past psychiatric history, desertion by partner and ambivalence to termination.

Psychotic illnesses in particular appear to be rare and are little reported. Brewer (1977) quotes an incidence of 0.3 per 1000 legal abortions; the single patient that he cites was a woman with two previous post-partum psychoses. Sim (1972) makes reference to 34 individuals with post-abortion psychoses that he noted over 21 years. Unfortunately, he gives very few details. Spaulding (1978) describes two patients with psychotic illness arising some months after induced abortions; because of this delay, the conclusion that the abortion was the precipitant for the illness is doubtful.

## Case report

A 17-year-old West Indian girl from a Christian background underwent a termination of pregnancy at eight weeks. Four days after her operation she had required readmission for evacuation of retained products of conception and was subsequently treated with metronidazole for one week. Her family noticed no change in her mental state until 13 days after the termination, when she developed a florid psychotic illness. She had not expressed any ambivalence or guilt over the termination and seemed untroubled by the event.

Three days before her admission to a psychiatric ward she became acutely disturbed, with insomnia, loss of appetite, disinhibition and inappropriate behaviour. Her mood was very labile and she was experiencing auditory hallucinations and ideas of reference. Initially, she was observed while taking no medication. Her mental state was very changeable; periods of withdrawal and non-communication were interspersed with periods of disinhibition. She was vague and perplexed and answered inappropriately to all questions. Her affect was shallow; she was not confused or disorientated. Physical examination revealed no abnormalities and routine blood tests were all within normal limits. A urinary drug screen was negative.

After ten days she was commenced on pimozide (4 mg daily), began to respond immediately, and on an increased dose made more rapid improvement. She was reluctant to discuss her illness but denied any depressive feelings related to the termination. The patient stopped taking medication a few weeks after leaving hospital, yet remained well. Although she denied any ambivalence towards the termination, she became pregnant again almost immediately and decided not to have a further abortion. No problems have arisen since the birth.

## Discussion

In this patient's case, there was no personal or family history of psychiatric illness. Relatives gave a history of a rebellious adolescence, with truancy and bad behaviour at school and at home. However, more worrying was the fact that she had suddenly left home 18 months before presentation, and had had no contact with her family during this time. Further investigation disclosed that she had had a drifting, aimless existence over this period, staying with friends and in hostels for varying lengths of time, with no stability in her life.

When she recovered from her psychotic illness, a striking persistent feature of her mental state was her shallow affect. This, coupled with the history and presentation, leads one to question whether the psychological and physical stresses in this case had combined to precipitate a first episode of an incipient schizophrenic illness.

Metronidazole has been implicated in the aetiology of confusional states during its use; however, in the cases cited, the symptoms of disorientation, hallucinations and confusion were related to the time of taking the drug and to its concentration. This patient had discontinued the antibiotic two days before the onset of any psychotic features, and the patient's mental state remained severely impaired until treatment with neuroleptics was instigated. The presentation of the illness was not typical of a drug-induced psychosis. The general anaesthetic that she received for the evacuation procedure is unlikely to be implicated in a psychosis developing nearly two weeks later.

It is of interest that this patient became pregnant again almost immediately. This fact, along with her decision to continue with the pregnancy, would cause one to question her claim that she experienced no guilt or ambivalence to the thought of termination, and might lead to the hypothesis that there were underlying psychological stresses that may have played some part in triggering this illness.

This patient would have been at high risk of developing a psychotic illness in the puerperium and it is noteworthy that she remained well during this period.

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# The Neuroleptic Malignant Syndrome and Pneumomediastinum

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A patient is described who suffered from the neuroleptic malignant syndrome, complicated by a pneumomediastinum. This has not been reported previously.

The term 'neuroleptic malignant syndrome' was coined by Delay & Deniker (1968). It comprised an idiosyncratic reaction to administered neuroleptics either alone or in combination with other drugs, such as tricyclic antidepressants or lithium (Smego & Durack, 1982). Symptoms include hyperpyrexia, muscle rigidity, and autonomic disturbances, such as tachycardia, sweating and problems with micturition. The mortality is high, being variously quoted as between 20% and 30% (Addonizio *et al*, 1986). The syndrome has found widespread interest recently since it is believed that the incidence may well have been underestimated previously (Abbott & Loizou, 1986; Lavie, 1986).

The patient reported below had the classic features and a complication which has not been described before.

## Case report

A 32-year-old unemployed man was admitted to Stepping Hill Hospital, Stockport, in September 1985, with marked rigidity, pyrexia and hyperventilation. He had suffered minimal brain damage at birth and was classed as educationally subnormal. He had had several generalised fits in his early 20s and one schizophreniform illness in his late 20s. In August 1985 he went on holiday with a friend to Lourdes, in France. While there he suffered an acute psychotic episode which was treated in a French hospital with chlorpromazine and haloperidol. After ten days he returned to England and sought a further prescription from his own general practitioner. Although he had not been taking any medication before his holiday, he was prescribed a course of haloperidol (5 mg t.d.s.), chlorpromazine (25 mg t.d.s.), and benzhexol (2 mg b.d.). Over the next 12 h he became progressively more rigid and dyspnoeic and took to his bed. He became incontinent of urine. After a home visit by his general practitioner he was admitted to hospital.

On admission his temperature was 37.5 °C, rising to above 38 °C some hours later. He was unresponsive to questions or to pain, was clinically dehydrated and in mild respiratory distress. His skin was sweaty and all his limbs showed marked rigidity. Although his breath sounds were normal then, his respiratory rate was increased and he was using the accessory muscles of respiration. An acute reaction to neuroleptics was suspected and treated by cessation of neuroleptic medication, procyclidine, and intravenous rehydration with dextrosaline. A urinary catheter was introduced. His initial blood screen showed features of dehydration, with raised levels of urea and bilirubin and a potassium level of 4.1 mmol/l, all of which resolved with rehydration. The haemoglobin level was 17.4 g/dl and the haematocrit reading 0.516. His white-cell count was markedly raised to $20.2 \times 10^9$/litre, with a pronounced neutrophilia. Blood gases were within the normal range.

His clinical condition deteriorated, with increasing rigidity, hypersalivation, tachypnoea and the development of chest signs consistent with pulmonary infection or aspiration. A chest X-ray showed patchy opacity in the lower lung fields. Chest physiotherapy and a course of i.v. amoxycillin (500 mg q.d.s.) were started. Gentamicin (80 mg b.d.) was later added to this regime.

On the third day after admission his rigidity had improved significantly and he was no longer in respiratory distress. Chest physiotherapy was producing copious amounts of frothy green sputum (earlier samples of which had grown *Staphylococcus aureus* only).

Despite the clinical improvement in the patient, however, a chest X-ray revealed a pneumomediastinum.

There were no symptoms or signs suggestive of oesophageal rupture and a gastrografin swallow was judged normal. The pneumomediastinum was monitored over the next few weeks with X-rays, and resolved spontaneously. The patient improved further on oral antibiotics and was discharged home well, mentally and physically, ten days after admission.

## Discussion

The patient's illness included the classic features of the neuroleptic malignant syndrome: recent treatment with neuroleptics; a temperature in excess of 37.5 °C; muscle rigidity; tachypnoea; neutrophilia; and various autonomic disturbances. These were seen with other features that have been associated with the syndrome, for example a period of relative dehydration preceding the illness. The associated predisposing factor of organic brain damage, as suggested by Caroff (1980), was also present.

The pneumomediastinum that appeared on the third day is a striking and unusual feature. Two theories, at the time, were thought to account for this. Either some secondary infective organisms were present to form a gas pocket, or, perhaps more likely, the pneumomediastinum was a direct consequence of the hyperventilatory phase of the illness. This is all the more unusual since no overt lung disease was present before the illness (Maunder *et al*, 1984).

Delay & Deniker (1968) suggested that pulmonary congestion was a cardinal feature of this syndrome. This is now thought to be a secondary feature (Abbott & Loizou, 1986), but was present in this patient, possibly as a result of aspiration.

The patient recovered with simple withdrawal of neuroleptic agents, procyclidine, and cardiorespiratory support measures. In view of the severity of his condition, his recovery was most fortunate. Recent reports have suggested the use of dantrolene and bromocriptine in the treatment of the syndrome, although the numbers of patients involved in trials are small (Abbott & Loizou, 1986; Ward *et al*, 1986; Dhib-Jalbut *et al*, 1987). Other reports have mentioned the use of electroconvulsive therapy (Addonizio *et al*, 1986). Much further work remains to be done in the field by physicians, neurologists and psychiatrists.

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# Zuclopenthixol-Induced Neuroleptic Malignant Syndrome at Rechallenge and its Extrapyramidal Effects

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This is the first report of a zuclopenthixol-induced NMS. The lack of previous reports may be because the receptor-binding profile of thioxanthenes gives rise to fewer extrapyramidal effects than comparable neuroleptics. It is important to know more of the relationship between the potential for induction of extrapyramidal effects and success in NMS rechallenge.

The neuroleptic malignant syndrome (NMS) is a rare, but serious, complication of neuroleptic therapy. It is characterised by: (a) diffuse muscle rigidity, cogwheeling or waxy flexibility, (b) pyrexia, (c) alteration of consciousness (stupor, negativism, confusion, coma), and (d) autonomic lability (Kellam, 1987).

Reports of NMS induction by mono neuroleptic therapy with zuclopenthixol are unexpectedly lacking, although this drug is commonly used.

A case of zuclopenthixol-induced NMS at rechallenge is reported. The lack of published reports is discussed.

## Case report

A 33-year-old woman was admitted with a four-week history of stuporous psychotic state and presumed NMS, induced by haloperidol (10 mg b.d.d.) and trifluoperazine (50 mg q.d.d.). There had been waxy flexibility, especially at the arms, cogwheeling and hypertonia with pyrexia (maximum temperature of 38.8 °C), creatine kinase level of 970 U/litre and leucocyte count of $11.2 \times 10^9$/litre. As the cardiac rate had been 200 per min, a beta-blocker was given. Neuroleptics were stopped.

She was in a stuporous, mute and agitated state, without extrapyramidal signs, pyrexia or autonomic lability. Therefore a diagnosis of NMS or pernicious psychosis could not then be made.

Three days after admission, severe anxiety and psychosis led to rechallenge with zuclopenthixol (10 mg and then 20 mg t.i.d.). After one day, extrapyramidal signs developed (rigidity, cogwheeling, waxy flexibility and a coarse tremor), pyrexia (38.4 °C), confusion with stupor and mutism, autonomic lability with hyperventilation, tachycardia and profuse diaphoresis. CK values reached 386 U/litre, MB 11 U/litre (reference value 0–40 U/litre).

The patient was transferred to the department of neurology, and treated with dantrolene (10 mg/kg per day), and bromocriptine (5 mg t.i.d.).

Recovery was complicated by thrombosis in the right femoral vein, but was eventually complete. Follow-up after one year showed no pathology and good functioning.

## Discussion

This report concerns the first case of mononeuroleptic therapy with zuclopenthixol leading to NMS at rechallenge. Previous reports have concerned (a) multineuroleptic therapy (Snoek *et al*, 1982), (b) the same case was described, on one occasion with use of zuclopenthixol, and on another with clopenthixol, with concomitant use of other neuroleptics (Verhoeven & Elderson, 1985: Verhoeven *et a.*, 1985*c*), so that it is unclear which medication was involved, and (c) a variant without pyrexia and concomitant lithium therapy (Sullivan, 1987).

This lack of published reports is interesting. Firstly, based on the market share of zuclopenthixol, one would expect more publications. For example, in Holland, zuclopenthixol had a market share of 12.5% in 1987, and haloperidol of 13.5%, while for the UK the market share of zuclopenthixol is greater than that of haloperidol (Lundbeck, personal communication). This contrasts with the number of reported NMS cases: in their review Addonizio *et al* (1987) found that haloperidol was involved in 57% (61 cases).

Secondly, one is tempted to speculate that the neuropharmacological profile of thioxanthenes (e.g. zuclopenthixol) could be involved. These compounds bind nearly equally effectively to the $DA_1$ and the $DA_2$ receptors, while comparable neuroleptics, like haloperidol, have more affinity for the $DA_2$ receptor. It is possible that this binding profile is related to the potential for NMS induction, since fewer extrapyramidal effects are reported for thioxanthene derivatives, including zuclopenthixol, compared with haloperidol (Heikkilä *et al*, 1981; Kuny & Woggon, 1983; Nordisk Dyskinesia Study Group, 1986).

Although these considerations may be of clinical interest, more study is needed before a pattern of prescription, for example in NMS rechallenge, could be based upon it.

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**Contents:** The Camberwell collaborative depression study/Obsessive-compulsive rituals/Near-death experience/Teenage depressive stupor/Defining personality disorder/Positive symptoms of schizophrenia/Internal monitor defect in schizophrenia/Naltrexone and clonidine in heroin withdrawal treatment/Delusion of inanimate doubles/Delusional depression in 19th-century Scotland/Shoplifting in families of mentally handicapped persons/Photography for anorexia nervosa/ECT mythology?/Manic features during a course of ECT/Philosophy for trainees/Hyperventilation causing asthma/Malignant hyperpyrexia syndrome in combined treatment

## The Camberwell Collaborative Depression Study

SIR: We would like to raise some queries about the third paper in this series reporting a study of depressed patients and their relatives (McGuffin *et al, Journal,* June 1988, **152,** 775–782) which may also be puzzling other readers of the *Journal.*

Table III purports to test whether life-event associated depression 'breeds true' within families. In order to assess this the probands and their relatives should be compared using the same measure, yet detailed reading of the text does not reassure us that this has been done. First, the period over which life events have been assessed seems to be the three months before *onset* of depression for the probands but the three months before *interview* for relatives (pp. 777–778). Given that life events in both patient and relatives are related to onset, this is bound to lead to under-reporting of events for the relatives (the authors note that most of the relatives with depression had experienced onset within 12 months of interview). Second, it is not clear whether Table III uses a different measure of 'life event' for patients from that in Tables I and II. If, as would be expected, the same measure is used, then it is not comparable to that used for relatives (footnote 3, Table I, and footnote 1, Table III, make it clear that the focus rating is being used differently). This would again lead to the under-representation of events in relatives. Much of the discussion rests on the assumption that the relationship between events and depression is not as strong in the relatives as in the probands (p. 781), but this is only a legitimate conclusion if comparative measures have been used. Even if comparable measures have been used throughout, it is not clear that the association is stronger among patients than relatives. Since by definition all the patients are depressed, the only way is to look at the percentage with life events. This is roughly 34% (30/83 in Table I, but 27/83 in Table II, and see also percentages in columns 5 and 6, line 4 of Table VI in the companion paper by Bebbington *et al,* June 1988, **152,** 754–765). The comparable figure for relatives is 50% (21/42). Thus the onset for patients appears, if anything to be less strongly associated with life events than that of the relatives.

Confusions in time periods also arise in Table IV. Here the majority of relatives must have been without depression, but the legend of the table suggests that recent life events occurred in the three months before onset. Perhaps in both Tables III and IV, the authors intended to specify onset for those with ID level of 5 or greater, and three months before interview for the rest. Certainly the figure of 102 relatives with recent life events is common to Tables III and IV, and suggests a common definition.

The figure in Table IV for their community sample subjects with recent life events is surprisingly low given other studies including earlier reports of this sample. A paper published in 1982 based on this community survey gives higher rates for independent events *alone* during the three months before onset for 'cases' and interview for 'non-cases' (Bebbington *et al,* 1982). As Tables III and IV include both independent and possibly independent events, we would expect the rates to be higher still. Data from other research in the same area also indicates a higher rate (Brown & Harris, 1986).

One final puzzle may not be answered by these data, but it is an interesting speculation. Most surveys suggest that about half of those with current depression are suffering from 'chronic' disorders in the sense that onset dates from a time before the last 12 months. It is curious that only 5% of the relatives interviewed in this study did so. Could this unusual feature be in some way related to their being the relatives of depressed probands rather than random community sample cases?

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BROWN, G. W. & HARRIS, T. O. (1986) Stressor, vulnerability and depression: a question of replication. *Psychological Medicine*, **16**, 739–744.

SIR: We are grateful to Dr Craig and Professor Murphy for their close reading of our paper and the opportunity to resolve an apparent ambiguity. Their second paragraph is quite correct. In Tables III and IV of our paper, the life events referred to were in the three months before onset for those relatives with an ID level of 5 or greater, and three months before interview for the rest. We hope that this partially relieves their puzzlement referred to in the paragraph, and that we can fully relieve their perplexity by explaining that the same definition of life event was used for both proband and relative in Table III. They should note, however, that we are not making a case that life events have greater impact on probands than their relatives (and we agree that it would be difficult to sustain such an argument on the basis of the data described in our set of papers). The main point is that life events are strongly associated with the onset of depression in a community sample, but not in a sample of first-degree relatives.

The third question relates to the frequency of life events and the comparison we make between the community sample and the first-degree relatives. In our Tables IV and V we use the same definition of life events in both groups. Although we do not provide the results in the paper we did in fact find that threatening life events of any definition were more frequent in relatives than in the community. The apparent discrepancy between the event rate in the community group and that given by Bebbington *et al* (1981) is due to our use of figures which are weighted back to Bebbington's orginal sample in order to achieve an accurate estimate of the population frequency of recent events. This is necessary because of the two-stage sampling strategy employed by Bebbington *et al* (1981).

The final point raised by Dr Craig and Professor Murphy is an interesting one, and the question of why there should be a comparatively small proportion of chronic cases among first-degree relatives has also occurred to us. We are inclined toward a more mundane explanation than the one they offer. It seems likely to us that the dating of onset of very broadly defined depression is an inexact procedure and one where we may have adopted a different definition of time of onset from previous workers who have focused on community samples. We used a Past History Schedule (PHS) in conjunction with the Present State Examination (PSE) (McGuffin *et al*, 1986). The PHS/PSE interviews identify past episodes and define the most severe occurrence if multiple episodes are evident. It may be that this approach more clearly delineates the episodic nature of depression than does a less structured enquiry about past PSE-type symptoms over an extended period.

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## Obsessive-compulsive rituals

SIR: Regarding Katz *et al's* letter from CIBA-GEIGY (*Journal*, December 1988, **153**, 845) about our clomipramine study (*Journal*, April 1988, **152**, 522–534), we can understand that our findings may be unwelcome to them. Their letter contains some confusion and mistakes that need clarification and correction.

In our literature review we wrote "There is no evidence that clomipramine is significantly better than other tricyclic drugs in OCD despite a widely held belief to the contrary." CIBA-GEIGY claim that clomipramine was 'therapeutically' superior to desipramine in treating OCD; in the trial they cite of Zohar & Insel, of the nine clomipramine patients three had not been randomised, so that group was not properly controlled. Nor do CIBA-GEIGY cite the only other controlled comparison in OCD of clomipramine and desimipramine (Rapoport *et al*, 1980), where the two drugs differed neither from one another, nor from placebo. Our point holds that in no properly randomised controlled study of OCD has clomipramine been *significantly* superior to another tricyclic drug.

It is strange that CIBA-GEIGY refer readers to Kasvikis & Marks (1988) to see that E (therapist-accompanied exposure) was added from week 8. In our original paper we state this clearly in the Abstract, in Fig. 1, and in the Design.

CIBA-GEIGY are wrong in writing "effects beyond week 8 are confounded by virtually asymptotic performance of the clomipramine and placebo groups, and a concomitant change in methods"; the mistake about the asymptote is repeated later in the letter. Firstly, Fig. 2 of our paper shows a clomipramine and the placebo group ($Ce_2E$ and PeE) continuing to improve from weeks 8 to 17 on five of the six measures shown. It is this improvement in the placebo group that makes the drug effect disappear after week 8. Secondly, adding E from week 8 onwards to a clomipramine and the placebo group, far from confounding their comparison, actually strengthened it by testing drug effect while controlling strictly for psychological treatment. It is thus incorrect for CIBA-GEIGY to state "only the initial 8 weeks of this trial offer a relatively unbiased estimate of the therapeutic effect of clomipramine v. placebo". Moreover, there was no significant effect of adding E to self-exposure from week 8 onwards once the levels at week 8 had been controlled by ANCOVA, so this addition is irrelevant in comparing drug with placebo. Given the highly significant superiority of self-exposure over anti-exposure and the limited and transient superiority of clomipramine over placebo, we have to conclude that self-exposure was the most potent therapeutic factor in our trial.

CIBA-GEIGY are correct to note, as we did, that from weeks 0 to 8, clomipramine was superior to placebo, but fail to say this was on only 5 of 14 measures of rituals and with mainly low levels of significance, whereas self-exposure had an effect on fully 11 of those same 14 measures and mainly at a far higher level of significance. They ask, "What would be adequate in the authors' minds to consider a drug v. placebo difference as clinically significant or durable?" The answer is that significance requires an effect on most relevant measures, and durability requires persistence of that effect: we found neither.

The letter is inaccurate in saying that our patients were "preselected to ensure that they would be responsive to behavioural intervention". We included many extremely severe and chronic cases with widely ramifying handicaps whom we knew would be very difficult to treat. Only 5 of 124 patients suitable for the trial were excluded because previous behavioural treatment had failed, and eight more refused such treatment. In contrast, fully 22 patients refused trial entry because they did not wish to take drugs, so our study preselected patients who were relatively compliant in taking medication.

CIBA-GEIGY write that exposure patients "were required to undergo up to 3 hours of self-exposure therapy each day. It is unlikely that any other treatment would have much effect, or for that matter could have much effect, given this magniture of exposure." The authors thus seem to accept our conclusion that self-exposure turned out to be a major therapeutic factor that might swamp any others. Clomipramine did have a mild effect nevertheless, but only briefly and only when self-exposure was added, whereas clomipramine plus three hours of self-antiexposure a day had virtually no effect.

Inclusion of the antiexposure group vitiates the letter's claim that our design was "set up as a comparative study of the adjuvants to exposure". Our design was adopted precisely in order to compare clomipramine without and with exposure, and to examine the effect of adding E to self-exposure. Limitation of resources prevented us from also testing clomipramine with no instructions about exposure ('Do whatever you feel is right for you'). This turns out to be probably unimportant, as OCD cases coming for treatment are usually very chronic (a mean of nine years' duration at presentation), no study has shown benefits from clomipramine or any other drug lasting more than a few months, many authors have noted the frequency of relapse on stopping medication, in the only two controlled studies to have long-term follow-up there was no clomipramine effect at one-and two-year follow-up (Mawson *et al*, 1982; and the present one – Kasvikis & Marks, 1988), and exposure confers benefits usually lasting at least four years.

Our findings agree with others in the literature that clomipramine can have a 'significant' effect. However, merely saying effects were significant is not enough. How significant were they, and for how long in a chronic condition? On both counts clomipramine was unimpressive in our study. Progress will be faster when drug companies and other bodies support more studies with long-term follow-up well beyond the four- to eight-week designs that are usual. This will probably only happen when the CSM and FDA insist on chronic studies to justify chronic prescription for chronic disorders.

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## Near-death experience

SIR: The article by Roberts & Owen (*Journal*, November 1988, **153**, 607–617) called to mind a recent article by the philosopher Sir Alfred Ayer (1988), entitled "What I saw when I was dead". Sir Alfred's heart evidently stopped beating for four minutes after he choked on a slice of smoked salmon. On recovering he described the experience to a French friend: "Did you know that I was dead? The first time I tried to cross the river I was frustrated, but my second attempt succeeded. It was most extraordinary. My thoughts became persons." He says further, "I was confronted by a red light, exceedingly bright and also very painful even when I turned away from it. I was aware that this light was responsible for the government of the universe. Amongst its ministers were two creatures who had been put in charge of space."

In analysing the experience, Sir Alfred says it "could well have been delusive. A slight indication that it might have been veridical has been supplied by my French friend, or rather by her mother, who also underwent a heart arrest many years ago. When her daughter asked her what it had been like she replied that all she remembered was that she must stay close to the red light."

Sir Alfred's experience corresponds significantly to the description of NDE provided by Greyson (1985), incorporating parts of the 'transcendental component', i.e. encountering guides, coming to a border of no return (in this case the river), and parts of the affective component, i.e. being surrounded by a brilliant, warm (in this case, red) light. His recollection, "my thoughts became people" is reminiscent of the experience that we, as psychiatrists, have with psychotic patients; i.e. there is a correspondence between their thoughts and the verbal productions/forms of their hallucinated objects.

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## Teenage depressive stupor

SIR: We read with interest Powell *et al's* report of depressive stupor in a 13-year-old boy (*Journal*, November 1988, **153**, 689–692). The authors' claim that there are no published descriptions of stupor in this age group is, however, incorrect, as case 4 of our series of ten cases of adolescent bipolar psychosis also presented with stupor at the age of 13 years (Hassanyeh & Davison, 1980).

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## Defining personality disorder

SIR: The validity of personality disorder (PD) as a mental illness has recently been the subject of several articles and letters (Blackburn, 1988; Chaloner, 1988; Cook, 1988; Gunn, 1988; Lewis & Appleby, 1988), with the majority favouring its rejection. While statistical cluster techniques and reliable personality-trait inventories support the existence of fixed deviant personalities, they cannot address the question of whether or not they are illness *per se*, as any such conclusion relies on the prior definition of mental illness. In the introduction to their study on the pejorative implications of the label 'personality disorder', Lewis & Appleby (1988) comment on the difficulty inherent in defining mental illness. Indeed, this issue is crucial as regards the nosological status of personality disorder. DSM–III (American Psychiatric Association, 1980) does not offer a concise definition of mental illness, but the "conceptualisation" offered in the Glossary of Technical Terms makes it difficult to exclude PD if that diagnostic and classification system is used, viz.: "A mental disorder is conceptulised as a clinically significant behavioural or psychologic syndrome [Parameter 1] ... associated with... impairment in one or more areas of functioning [Parameter 2] ... not only in the relationship between the individual and society [Parameter 3]." Trait cluster techniques satisfy the first parameter, and impaired interpersonal relationships, the second. Parameter 3 is an expedient rider that permits the exclusion of "voluntary" criminality and political agitation. The classic concept of psychopathy (DSM–III category 301.7, Antisocial personality disorder) qualifies as a mental disorder on these grounds.

The key to possible solution is referred to by Blackburn (1988) in his review of the moral implications of the psychopathy concept. He notes that the DSM–III requirement that clinicians make diagnoses on both Axis I (clinical syndromes) and Axis II (personality disorders) makes it explicit that different criteria are involved in these two sets of disorders, and that symptoms of major syndromes differ in kind rather than degree from the traits that define personality disorders. However, DSM–III makes no allowance for this, as only one tentative definition of mental disorder is offered. Criteria that are arguably appropriate for the definition of *intra*personal mental disorders, as per the traditional medical model, inappropriately subsume *inter*personal disorders, better understood using a bio-psycho-social model. Personality disorder is a diagnosis given to an individual, yet it relies on external referents (other persons) to become manifest. A mental disorder should result in distress or disability in an affected individual when he/she is observed in social isolation. One possible discriminator would be the 'Desert Island Test', i.e. a statistically valid syndrome must reliably result in distress or disability if a putatively affected individual were to be marooned alone on a desert island. This test would exclude PD from being classified as a mental disorder. Were he a candidate for the PD label, Robinson Crusoe would have only shown signs of disturbance once Man Friday appeared. In keeping with the empiricism underpinning DSM–III, PDs should be relabelled 'Interpersonal disorders', and their nosological status considered more akin to the V Codes (conditions not attributable to mental disorders that are a focus of attention or treatment) than to the clinical syndromes.

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LEWIS, G. & APPLEBY, L. (1988) Personality disorder: the patients psychiatrists dislike. *British Journal of Psychiatry*, **153**, 44–49.

SIR: Blackburn (*Journal*, October 1988, **153**, 505–512) contends that "the current concept of psychopathic or antisocial personality remains 'a mythical entity'." Although I find myself in agreement with the author's assertion that a psychiatric syndrome defined largely or entirely on the basis of social deviance (e.g. DSM–III antisocial personality disorder) is likely to be aetiologically heterogeneous, I find the empirical basis for several of his arguments concerning the nosological status of primary (i.e. Cleckley) psychopathy wanting.

Blackburn asserts that: (a) the evidence for the construct validity of Cleckley's (1976) criteria for psychopathic personality is relatively weak and inconsistent, (b) Cleckley's criteria include items tapping both personal and social deviance, and thus define a 'hybrid' construct; and (c) Cleckley's criteria do not identify a homogeneous group of individuals. Below I address each of these points in turn.

(a) Despite Blackburn's contention that the accumulated research suggests that Cleckley's psychopathic personality "remains a speculative construct" (p. 505), it could be argued that the laboratory findings concerning primary psychopathy are as replicable and coherent as that for any psychiatric disorder. For example, primary psychopaths have consistently been found to exhibit poor passive avoidance learning, diminished spontaneous skin conductance fluctuations, a slow recovery rate of the electrodermal response, slow electrodermal classic conditioning to aversive stimuli, diminished electrodermal and augmented cardiovascular activity to impending aversive stimuli, and excess theta waves during resting EEG (Hare, 1978; Lykken, 1984).

Moreover, many of these findings appear to accord well with a physiological model of diminished behavioural inhibition (Fowles, 1980).

(b) Blackburn is correct in stating that Cleckley's criteria comprise items tapping both personal and social deviance. Nevertheless, Cleckley's criteria are weighted heavily in the direction of personality characteristics, and the extent to which the presence of a few social deviance items results in aetiological heterogeneity remains an empirical question. Although there is admittedly little research on this issue, the results of at least one investigation suggest that Cleckley-defined psychopaths with relatively low rates of social deviance resemble those with higher rates of social deviance on a number of psychometric, clinical, and familial variables (Widom, 1977).

(c) The only evidence that Blackburn cites in support of his third contention is a cluster analysis (Blackburn & Maybury, 1985) in which criminals satisfying Cleckley's criteria fell into two groups, both characterised by a lack of empathy and affection, but differing in their degree of aggression and impulsivity. Nevertheless, heterogeneity at the phenotypic level does not preclude homogeneity at the genotypic level, and there is no evidence that these two clusters are distinguishable on external or biological validating variables. Moreover, as the authors themselves point out (p. 385), the less impulsive and aggressive group was considerably older, raising the possibility that the two clusters were an artefact of the decline of psychopaths' criminal behaviour with age. This 'burn-out' phenomenon has recently received empirical support (Hare *et al*, 1988). Finally, Blackburn points out that because some of Cleckley's criteria overlap with those of several DSM–III personality disorders (e.g. histrionic and narcissistic), Cleckley's construct is probably broader than that of antisocial personality disorder. Although this may be the case, this does not necessarily imply that Cleckley's construct is aetiologically heterogeneous. An equally plausible alternative is that the DSM–III taxonomy of personality disorders has failed to "carve nature at its joints", and that a single diathesis underlies several Axis II syndromes (Lilienfeld *et al*, 1986).

By referring to psychopathic personality and DSM–III antisocial personality disorder as "synonyms" (p. 505), Blackburn may unintentionally give readers the mistaken impression that the former is generally operationalised in terms of socially deviant behaviour. In fact, the most influential criteria sets for psychopathic personality, particularly that of Cleckley, rely primarily on personality characteristics, and are thus largely immune from the criticisms that Blackburn raises. Moreover, Cleckley's criteria yield a syndrome with theoretically meaningful and well replicated psychophysiological correlates. Finally, Blackburn's assertion that individuals identified on the basis of Cleckley's criteria are aetiologically heterogeneous has yet to be demonstrated. Thus, Blackburn's proclamation that the concept of psychopathic personality is "ill-conceived" and "should be discarded" (p. 511) is premature and misleading.

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## Positive Symptoms of Schizophrenia

SIR: We are pleased that our paper suggesting an approach to the neuropsychology of schizophrenia (Frith & Done, *Journal*, October 1988, **153**, 437–443) has proved a stimulus sufficient to drive some to put pen to paper. Lo (*Journal*, March 1989, **154**, 414–415) has presented a most interesting account of certain ways in which the dopamine system might break down in psychosis. Since, however, he does not relate these mechanisms directly to symptoms, we feel unable to give useful comments on his account.

As is only to be expected, most writers have readily identified the weakest part of our account, as regards the positive symptoms of schizophrenia. We can explain quite well positive symptoms concerning action (e.g. delusions of control, passivity experiences), but not nearly as well, symptoms concerning communication (delusions of reference, third person hallucinations, etc.). We are currently preparing an account which specifically addresses these problems of communication. We suggest that recent experiments on early childhood autism (implicating the lack of a 'theory of mind') may be relevant to those positive symptoms of schizophrenia that concern communication. Briefly, analogous to the problems of monitoring their intentions, the patients may also have problems in monitoring the intentions of others.

In addition to concisely pinpointing our weakness, Timney (*Journal*, February 1989, **154**, 268) implies that the symptoms we can explain are among the less common. However, in a survey of 242 patients with a first episode of schizophrenia carried out by our colleagues Eve Johnstone and Fiona Macmillan, delusions of control (34%) and of thought insertion (27%) were almost as frequent as verbal hallucinations to the subject (48%) and third person hallucinations (32%). We would agree with Ring (*Journal*, February 1989, **154**, 268) that depersonalisation and derealisation should be fundamental experiences in schizophrenia which increase with the increasing severity of positive symptoms. In Johnstone & Macmillan's survey they are indeed no more common than the classic positive symptoms (30% and 40% respectively). Maybe these experiences pale into insignificance beside the more extremely positive symptoms and are simply not reported.

Adams (*Journal*, March 1989, **154**, 416–418) describes an elegant hierarchy of monitoring symptoms derived from Hofstadter. She does not, however, indicate how this more complex account might be experimentally tested. She is wrong to suggest that in Frith (1987) questioned the validity of Crow's distinction between type I and type II schizophrenia. Indeed, it was stated that "negative symptoms represent a primary disease process rather than a secondary coping strategy".

In contrast, Klemperer (*Journal*, March 1989, **154**, 415–416) considers that our account is unnecessarily complicated. She suggests that we are wrong in believing that hallucinations are actions rather than percepts. It is by now well established that perception is not a passive process of stimulus reception, but an active one requiring, among other things, the generation and testing of hypotheses. Our account does not deny that hallucinations might be percepts. In fact, we are suggesting that hallucinations occur when the patient misperceives his own actions. Such misperceptions can also give rise to the false beliefs that are the basis of delusions. Klemperer suggests that a much simpler explanation of these phenomena is that they occur because of biochemical and structural abnormalities. We feel that this explanation has little predictive value and, furthermore, represents a form of dualism that is most unsatisfactory. It is implied there are independent physical and mental systems that communicate with one another. As a result, an abnormal signal from the physical system causes an abnormal experience in the mental system. We believe that the mental and physical systems are not independent entities, but different descriptions of the same system. Thus there are physical processes in the brain that exactly correspond with mental processes in the mind. Our approach to the neuropsychology of schizophrenia is an attempt to find ways of matching up these two descriptions.

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## Internal monitor defect in schizophrenia

SIR: Frith & Done (*Journal*, October 1988, **153**, 437–443) put forward the theory of 'internal monitor defect' to explain the symptoms of auditory hallucination, delusion of control, and thought insertion in schizophrenia, and rejected the 'defective filter' theory. They postulated that these symptoms arose from the failure of the internal monitor system in registering the self-initiated actions (subvocal speech/act/thoughts) and hence labelling them as originating from an external agent. While I find this quite convincing, I have to point out that such a theory is no superior to the 'defective filter' theory is explaining other positive symptoms in schizophrenia, such as delusional perception, formal thought disorder, and delusion of reference. For delusions of reference at least, I find that the defective filtering out of insignificant and irrelevant external stimuli is a better explanation than the faulty labelling of "switch elicited by irrelevant stimulus". Symptoms like delusional perception and loss of reality testing indicate that there are defective thought processes, involving not only the labelling of ownership, but the actual logical deduction and interpretation of perception and thoughts.

Furthermore, I do not agree with the authors in saying that the monitor system is itself intact in schizophrenia. The classic symptoms of ambitendency (which Bleuler considered as a manifestation of the ambivalence of will), negativism, automatic obedience, and forced grasping seen in catatonic schizophrenia would be explicable only by a defective monitor failing to carry out its usual function of regulating the stimulus intention and the willed intention and deciding on which one to follow first.

Schizophrenics comprise a very heterogeneous group, and patients present with very different patterns of symptoms. There are probably more than several neuropsychological defects that give rise to different symptoms, and it is no wonder that no one theory can explain them all. All may be correct. Drs Frith and Done are on the right track in linking the symptoms of schizophrenia with neuropsychological theories and findings of malfunction in specific brain systems. One day it will lead us somewhere.

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## Naltrexone and Clonidine in Heroin Withdrawal Treatment

SIR: We noted with interest Brewer *et al*'s study of naltrexone and clonidine in the treatment of opioid withdrawal (*Journal*, September 1988, **153**, 340–343). The search for a rapid and effective treatment for opioid withdrawal has been in progress for many years (Kolb & Himmelsbach, 1938). A treatment which promises to reduce the length of detoxification to less than three days with minimal drop-out will clearly appeal to many clinicians working in this field. We suggest, however, that the claims made by the authors are overstated and not supported by the results of the present study.

The authors state that the treatment was of "high acceptability" to patients. No evidence is put forward in support of this view such as patient's reports of acceptability or even an assessment of subjective symptoms or objective signs of opiate withdrawal. Furthermore, the treatment described was not compared with any other more commonly available treatment such as methadone or clonidine, leaving the authors' claims of effectiveness open to question.

Opiate withdrawal is now recognised to be subject to the influence of psychological factors including expectancy (Phillips *et al*, 1986). Thus, it is essential to conduct studies in double-blind design (Drummond *et al*, 1989), otherwise highly misleading results may be obtained.

The authors describe their treatment as the "naltrexone-clonidine technique". Closer examination of the method, however, reveals that in addition, patients received diazepam, nitrazepam, flurazepam, and hyoscine. This latter treatment was prescribed for "troublesome" abdominal cramping and nausea which were clearly not relieved by the naltrexone-clonidine combination. Furthermore, the dose of diazepam prescribed (up to 180 mg per day) was considerably higher than in studies of benzodiazepines used alone in the treatment of heroin withdrawal. Indeed, some subjects "experienced significant discomfort". This suggests that the basic naltrexone-clonidine combination was ineffective in controlling opioid withdrawal. The question arises as to whether any one of the drugs used in this combination regime would have been effective if taken alone in a sufficient dose. In a recent double-blind trial we found that cholordiazepoxide (250 mg daily) was as effective in controlling subjective withdrawal symptoms as a conventional methadone detoxification regimen (Drummond *et al*, 1989). The authors postulate that the mechanism of action of naltrexone in opioid withdrawal is that it "rapidly normalises the number and sensitivity of opiate receptors and reversed opioid induced central noradrenergic activity". While this tempting speculation adds a sense of scientific validity to the treatment, it is not supported either by evidence in this study or in the study cited in support of it (Kleber *et al*, 1987).

The authors suggest that the results of this study have "major implications" for National Health Service (NHS) treatment programmes, and question the need for specialist detoxification units and indeed specialised training in psychiatry or the addictions. To suggest that a highly selected group of private patients with major financial incentives for treatment is comparable to attenders at an NHS drug clinic or general practice is erroneous. Second, home withdrawal "with the help of telephoned instructions, a visiting nurse or an electronic sphygmomanometer" in our view hardly constitutes comprehensive treatment, represents a narrow view of the problem of heroin addiction, and does not amount to good value for money.

In a review of the early history of detoxification treatments, Klob & Himmelsbach (1938) observed "new treatments said to be specific [for heroin withdrawal] are advanced from time to time and then discarded as useless or even harmful". Champions of the naltrexone-clonidine technique would be well advised to subject this treatment to proper scientific scrutiny before making such assertions about its effectiveness. The methodology for such an investigation has been in existence for nearly half a century.

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KOLB, L. & HIMMELSBACH, C. K. (1938) Clinical studies of drug addiction, III: a critical review of withdrawal treatments with method of evaluating abstinence syndromes. *American Journal of Psychiatry*, **94**, 759–797.

PHILLIPS, G. T., GOSSOP, M. & BRADLEY, B. (1986) The influence of psychological factors on the opiate withdrawal syndrome. *British Journal of Psychiatry*, **149**, 235–238.

SIR: Drs Drummond and Turkington have averaged one error of fact or interpretation for each of their six paragraphs. It is true that we did not cite the evidence for our claim of "high acceptability", but there are several free withdrawal programmes available to opiate addicts in London. That patients or their families were evidently prepared to pay for our programme, even though we now also offer out-patient methadone withdrawal, surely indicates a fairly high level of acceptability. Currently, over 80% of our withdrawal patients are self-referred.

The authors evidently believe our patients to be relatively affluent and unrepresentative. In reality, the large majority are from social class 3 or lower. Many are unemployed at the time of admission. One of the main reasons for speeding up the withdrawal process is that it reduces the cost. By further modifying our techniques, we can now discharge our patients after only 24 hours in most cases at a cost as low as £325. Even relatively poor families can often afford this sort of figure.

More importantly, Drs Drummond and Turkington seem to have overlooked the fact that the title of the paper is "Opioid withdrawal *and naltrexone induction* . . .", and that this technique is not simply a method of helping opioid addicts to stop taking opioids. It is also a method of getting them started on a drug which greatly reduces the risk of relapse (Brahen *et al*, 1984) without the usual delay of five to ten days after withdrawal when the risk of relapse is particularly high. In Drs Drummond and Turkington's own study, only 37% of their patients achieved drug-free status after 14 days, and several discharged themselves prematurely.

Objective measures of withdrawal symptoms would have been a useful addition to our study, but they are of less practical importance than whether or not a significant proportion of patients withdrawn using this technique continue to abstain from opiates after discharge. Whichever withdrawal technique is used, many addicts will report persisting discomfort, sometimes for weeks or even months after they have been officially 'withdrawn'. The preliminary results of a follow-up of our recent patients echo the findings of Brahen *et al* (1984) and others that provided naltrexone administration is supervised by a third party (usually a family member), early drop-out levels are low. Fewer than 10% appear to discontinue naltrexone during the first week. The value of supervision in preventing relapse is supported by studies of supervised disulfiram in the treatment of alcohol abuse, which involves similar concepts (Brewer, 1987). We did not compare our technique with other withdrawal methods using clonidine or methadone alone, but as we pointed out, others have already done so (Charney *et al*, 1986) and have found that clonidine-naltrexone comes out well.

Finally, although in a few cases the total diazepam dose for the first 24 hours exceeded the equivalent of the maximum daily chlordiazepoxide dose used by Drs Drummond and Turkington, most of our patients used considerably less. Furthermore, we prescribed daytime benzodiazepines for only two to three days, so that our total benzodiazepine dosage was very considerably lower than theirs. In our present 24-hour detoxification and naltrexone-induction programme, the total benzodiazepine dose is even less, further supporting our finding that speeding up the withdrawal process reduces the overall requirement for supplementary medication. Thus the suggested mechanism of rapid normalisation of opiate receptor sensitivity is indeed supported by our study and by our subsequent experience. However, I regret that in trying to be concise we inadvertently gave the impression that this theory originated with Kleber *et al* (1987), rather than with some of the studies cited in their paper.

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## Delusion of inanimate doubles

SIR: The report by Anderson (*Journal*, November 1988, **153**, 694–699) presents convincing evidence from the literature that the Capgras symptom includes the duplication of objects, as well as persons, and does not depend on psychodynamic mechanisms. However, he undercuts his argument by emphasising how the patient was emotionally invested in his tools, thereby giving some specificity to the content of the delusion. A good critique of psychodynamic formulations is provided by Sinkman (1983); he also includes the replication of personal items under the Capgras symptom. In fact, Capgras & Reboul-Lachaux (1923, p. 10) note the substitution of a building: "... mais le Prêfet de police, le commissionaire eux-mêmes ont disparu et ont été remplacés par des sosies; 'la prêfecture de police a été renouvelée au moins dix fois en totalité dans ces dernières années; comme ca, personne ne saura l'hitoire (sic) des substitutions'."

In addition to the Capgras symptom, the patient had the Frégoli (believing that a persecutor was masquerading as another) and possibly the intermetamorphosis symptoms. The first part of the discussion shows some confusion in determining the former's presence because of the author's insistence on whether the patient actually saw a particular person; since these are delusional beliefs, the perceptual element is largely irrelevant.

Unfortunately, prosopagnosia rears its head as an explanatory mechanism. Prosopagnosia can be considered to be an inability to recognise a particular example within a single class of objects (not limited to faces) or the "defective contextual evocation for stimuli belonging to a visually ambiguous category"; bilateral symmetrical inferior mesial (fusiform, lingual gyri) occipitotemporal cortical lesions are responsible for this entity (Damasio *et al*, 1982). Psychotic phenomena do not arise from this condition, primarily because the occipital lobe is the least likely area to be the source for delusions.

Although many patients have mentioned minor changes in the appearance of the object of their delusion only a few, of more than 300 cases (Signer, 1987) have shown prosopagnosia or autoprosopagnosia. Of some cases recently with senile dementia of the Alzheimer type, one seemed to have had prosopagnosia (Kumar, 1987), but this may have been part of the disease's more general visual-spatial disturbances. I have examined a patient with the Capgras symptom who could not see the persons believed to be substituted (Signer & Benson, 1987), and one who was blind.

The syndrome of prosopagnosia is not what was intended by the term *agnosie d'identification;* it is clearly a delusion ("cette croyance aux sosies, encore que peu fréquente, s'observe, à titre de symptôme accessoire, dans les Délires de persécution, sous la forme d'une fausse reconnaissance associée à une interprétation erronée ... L'illusion des sosies, chez elle, n'est donc pas, à vrai dire, une illusion sensorielle, mais la conclusion d'un jugement affectif" (Capgras & Reboul-Lachaux, 1923, pp. 12–14). Perceptual phenomena (feature recognition) play a minor or insignificant role in the delusion of substitution; it is much closer to reduplicative paramnesia in cognitive pathology and neuroanatomic origin, with injury to frontal and temporal structures (Signer, 1987).

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## Delusional Depression in 19th Century Scotland

SIR: May I be allowed to reply to the letter from Morton (*Journal*, November 1988, **153**, 710–711), although I fear the issues he raises go beyond criticism of a single paper to methodological issues affecting all historical phenomenological research.

There is a tradition of such research which examines clinical data, for example the work by Loudon (1984) on chlorosis. The criticism that such work represents a "category fallacy" is based on two assumptions: firstly that a particular nosological category for one cultural group lacks coherence in another, and secondly, the comorbidity from physical illness may invalidate 'caseness'.

During the 1880s, many of the concepts of melancholia and depression were well advanced in terms of our understanding, with replacement of botanical schematas by empirical principles (Berrios, 1988).

This means that case books from that period contain a wealth of phenomenological data.

The role of comorbidity was examined in its relationship of alcohol, syphilis and tuberculosis, and such existing causes as were considered relevant for the case notes. This is likely to follow such a list as Clouston (1883) reports, for although the classification of his mentor, Skae, had fallen into disrepute, the influence of Morningside on Dumfries was obviously strong.

I am afraid that Morton is unduly influenced by references to Clouston in his assertions about training in psychological medicine in Scotland. Firstly, the Association of Medical Officers of Asylums and Hospitals for the Insane was established in 1853. The names of Superintendents at Crichton are not absent from its Journal. Secondly, Andrew Duncan was a most popular and successful extramural teacher in the Edinburgh Medical School and East House, for which he was the driving force, and which was opened in 1813, had teaching as one of its basic tenets. Sir Alexander Morison instituted a series of lectures in 1823 which were published and ran to four editions, the last published in 1848. He later lectured in London, both lecture courses being continued until 1853. Skae succeeded as Resident Physician Superintendent in Morningside in 1846, and continued the teaching of psychiatry which Morison had inaugurated, lecturing in the extramural school and giving demonstrations. Professor Laycock (1812–76), who held the Chair of Medicine in Edinburgh, was also a distinguished lecturer in mental diseases and their treatment, but Skae would not co-operate with Laycock on the use of clinical material for demonstrations. When Skae died in 1873, Sir John Batty Tuke became an extramural lecturer, and Thomas Smith Clouston was appointed Physician Superintendent at the Royal Edinburgh Lunatic Asylum, Morningside (Henderson, 1964).

I cannot in a letter adequately discuss wider issues of quantitative methods in historical studies, but trust that the points made above will go some way to justify the foundation of the work which was criticised.

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## Shoplifting in Families of Mentally Handicapped Persons

SIR: Fishbain (*Journal*, November 1988, **153**, 713) suggests "depression serving as a stimulus to the kleptomaniac behaviour, which in turn has an antidepressant effect through a symptom relief mechanism," as a more precise explanation for the shoplifting than stress. I would like to disagree.

Parents of mentally handicapped people are denied the usual expectation that most other parents have of their children flying the nest. They have to cope with each developmental milestone against a background of vulnerability due to their child's handicap. Psychiatrists working with mentally handicapped people and their families (especially mildly handicapped people living at home with their parents) are often approached for help during the transition from school to work/occupational environments. The importance of stress in these situations cannot be overestimated.

In my original case report (Roy, 1988) Steven's father did not have a previous history of depression. Although he was anxious, he had coped well in the past, and had a good work record. The parents said that they had lead a placid existence until Steven's behaviour changed. There was a clear-cut temporal relationship between the son putting his fist through the window in the evening and the father's offence the next morning. This implicates stress rather than depression triggering the offence. There was no doubt that the father was depressed, but this was probably secondary to environmental factors. There were no features of endogenous depression and it improved without recourse to antidepressants as the environmental factors were dealt with. I suggest that both the shoplifting and the depression were secondary to stress. Another family may have responded to the same stress differently.

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## Photography for Anorexia Nervosa

SIR: May I add to the comments by Byrne (*Journal*, December 1988, **153**, 848)? I have also found the use of visual recording of the physique of anorexic subjects to be of value both in documenting progress and as an adjunct to therapy. In particular, I have found confidential video-recording of the subject's physical presentation has been useful. Often, the appearance of parts of the body not easily viewed, such as the back and buttocks, has prompted anorexic subjects to comment spontaneously about the degree of emaciation that is present, when they tolerate viewing equally emaciated parts of their bodies that they can view more frequently. I look forward to the results of Byrne's prospective study.

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## ECT mythology?

SIR: Several points made by Russell (*Journal*, December 1988, **153**, 850) concerning the effectiveness of pulse-type ECT stimuli, are in need of clarification.

Dr Russell mentions recovery rates of over 90%, with small numbers of treatments using sine-wave ECT apparatus, but no quotes of specific references were given. The majority of research performed during the era of the sine-wave equipment is unlikely to have included standardised depression scales, and must, hence, be viewed cautiously. Abrahams *et al* (1983) found an 81% success rate of six bilateral ECT treatments with pulse-wave machines, which demonstrates the high level of efficacy of the method.

Certainly there is evidence to suggest the decreased effectiveness of unilateral ECT with the newer machines, and also an increased vulnerability to sabotage by inexperienced operators, with the lower currents involved. However, these factors seem to play little part in bilateral treatments.

Addressing the subject of side-effects, a study by Weiner *et al* (1986) reported a considerably increased level of cognitive impairment, following treatments with sine-wave equipment, when compared with pulsed bilateral ECT.

Now that it has been demonstrated that fits in excess of 32 seconds bestow the maximum benefit, I feel that the way forward is by the accurate measurement of ECT-induced seizures, with EEG monitoring equipment, so that seizures of optimum length can be more easily induced. I feel that this approach has mconsiderably more merit than relying on anecdotal successes of the past.

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## Manic Features During a Course of ECT

SIR: The development of manic symptoms or a complete manic syndrome in patients receiving antidepressent medication is well recorded and the clinician's response, reduction in medication with the additional prescription of major tranquillisers, is probably uniform. The management of manic features developing during the course of the ECT is, I suspect, less uniform. In training I encountered at least two patients who developed manic symptoms during a course of ECT which was, as a consequence, stopped. Thereafter the patients (both with major affective disorders) appeared to take a rather chronic course. My practice as a consultant has been to carry on a course of ECT if manic symptoms develop, on the basis that mania itself can be treated with ECT and the development of these symptoms suggests only that the affective disorder has been modified rather than fully treated. I cannot find much help in the literature on these alternative courses, and would be interested to know readers' views and experience in this area.

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## Philosophy for trainees

SIR: I recently had to prepare a journal club, and I selected Yorke's incisive article entitled "A defect in training" (*Journal*, February 1988, **152**, 159–163). His article led me to Benjamin's letter on the mind–body problem (*Journal*, July 1988, **153**, 124) in which he introduced the need for some sort of philosophical education during the training of junior psychiatrists. Inevitably, I came across Simpson's comments (*Journal,* December 1988, **153,** 846) on Benjamin's letter, and I would like to express my concern and disagreement with Simpson, on which philosophy to choose to enlighten the dark and sometimes erratic future of the young trainees.

Simpson considers dialectical materialism (DM) as the ultimate pathway that will lead us to clarify the irritating mind–body problem. Moreover, he implies that DM is a philosophy that "in a scientific manner" will help us to explain the problem.

Is there enough room in the decade of the post-anarchist epistemology for DM? Not only did Sir Karl Popper critically attack the scientific basis of DM but Paul K. Feyerabend went even beyond demolishing the sophisticated apparatus built by Popper.

Not long ago, Mario Bunge, Professor of Philosophy of Science at McGill University, published *Materialism and Science.* He concluded that the only philosophical materialism valid was that based on physics, and he, therefore, introduced us to the fascinating territory of quantum mechanics, matter, and reality. Nevertheless, he dismissed DM on the grounds of lack of an adequate scientific basis and an excess of 19th-century rhetoric. Furthermore, he warned us of the danger of omnipotent ideologies, e.g. DM, explaining away every form of human activity.

Having said this, it appears quite clear that any philosophy that wants to address the question of what matter is needs the aid of the new physics. Therefore, to study that complex arrangement of matter called man, we need a non-linear science that should not enter into contradiction with the principles formulated by physics. This science may well be evolutionary biology. Hence, any philosophy must be in accordance with this particular approach to reality.

I therefore think that what should be offered to a psychiatric trainee immersed in a confused materialist paradigm is a sensible blend of history of science and a thorough study of the evolution of the ideas on human nature. It would also be necessary to exploit current contradictions like the paradoxical shift from a materialist paradigm (brain) to a non-materialist one (mind) that is usual in psychiatric clinical practice.

In summary, there are certain properties of matter explained by physics; there are some emergent properties that are not explained by physics but that are not in contradiction with it, hence the need for biology and thus neurosciences. The mind–body duality is a pseudoproblem and what is needed is a paradigm, not to bridge the divide between mind and body, but to explain how matter organises itself to generate that complex set of functions with the impressive name of soul, spirit, and perhaps mind.

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## Hyperventilation Causing Asthma

SIR: Hibbert & Pilsbury's paper (*Journal,* November 1988, **153,** 687–689) is interesting, but the important thing to emphasise is that it is possible to make an assessment of the situation by careful attention to the clinical history and physical signs without the use of any special technology. The inter-relationship between hyperventilation and asthma is well known in the chest world. The fact that hyperventilation may proceed to asthma or that asthma may be complicated by hyperventilation or that the two may be closely interwoven has been known to me at least since 1960, when as far as I can remember I was introduced to the idea by Dr J. G. Scadding, who was then Dean of the Institute of Diseases of the Chest at the Brompton Hospital where I was an honorary consultant. It is referred to in a number of reviews, and in particular in my chapter in the Brompton textbook on asthma (Cohen *et al,* 1983). Asthma is a common disorder, and asthmatic patients may be anxious for the same reasons that make other people anxious. If an anxious asthmatic hyperventilates, there is a risk that his disorder will be misdiagnosed as asthma and if that happens and he is treated, say, with steroids, treatment will be ineffective. It is therefore very important to make an assessment whether one or other disorder is present or, much more frequently, since they are both commonly present simultaneously, which is the more important at the particular time and therefore which line of treatment, anti-asthmatic, anti-anxiety, or both, would be the most effective. This assessment can be made clinically as the following two patients illustrate.

*Case (1).* A married male teacher aged 34 seen in 1982, referred by Dr Duncan Geddes from The London Chest Hospital for an exacerbation of asthma which had prevented him from working for some weeks. He had suffered from asthma since the age of 13, and his presenting complaint was "I think my nerves are precipitating my asthmatic attacks." At the age of 18 he had been treated by a psychiatrist for an anxiety state, and he recalled an attack in which he said he felt "tense, worried, tension in the neck, I went rigid, heart pounding, throat dry, gasping but not wheezing." Since then he had had many such attacks, some of which continued into typical asthmatic attacks, and he distinguished these quite clearly from his typical attacks of asthma which began with wheezing and in which there were few obvious symptoms of anxiety. The distinction between the two types of attacks had not previously been made by his doctors. Treatment directed towards relieving his anxiety by dealing with certain family problems together with instruction in relaxation led to complete relief quite quickly, and he returned to work.

*Case (2)*. A male plasterer aged 28 was referred by Dr Joy Edelman of Barking Hospital in 1988. She had noticed that his asthma had persisted despite increasing doses of steroids, and that he could change from being completely free of wheezing one minute to having a wheeze quite audible without the stethoscope the next. She noted that the wheeze was always localised in the large airways, with good-quality breath sounds throughout the rest of the lung fields. He also complained of a sensation of a lump in the throat. In my interview with him he described how the lump in the throat appeared in only *some* of his episodes of breathlessness, and in these he experienced tingling in his fingers and around his mouth. These were evidently episodes of panic-over breathing, with incipient tetany. He had himself learnt that in these attacks he could relieve his symptoms by calming himself down. (The production of a wheeze in the large airways by compression of the chest by the voluntary muscles in asthmatics was described by Dekker & Groen (1957)).

In Case (2) Dr Edelman had thus made the distinction between the two types of attacks of breathlessness based on physical signs, and I had made it based on symptoms. Both methods are obviously useful.

Treatment of these patients depends on a careful assessment of the pathogenesis of the symptoms and this requires considerable attention to the detail of the history and physical signs. Where hyperventilation is important simple relaxation, concentrating on the chest, can be done very simply. In most patients a combination of specific anti-asthmatic treatment and treatment directed at the anxiety is probably necessary, and asthmatics are the ideal patients for collaborative management by physician and psychiatrist as first described by Maimonides in the 12th century (see Muntner, 1963).

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## Malignant hyperpyrexia syndrome in combined treatment

SIR: We are writing to add another report to that of Brennan *et al* (*Journal*, April 1988, **152**, 578–579) in which a fatal malignant hyperpyrexia was associated with the combined medication of L-tryptophan, lithium, and phenelzine. This appears particularly important in view of the fact that both the aetiological and the pathogenetic factors involved in the neuroleptic malignant syndrome (NMS) are still ill understood (Henderson & Wooten, 1981; Gribb, 1988).

*Case report.* At the time of her death, this 48-year-old woman had been treated for depression since June 1986. Various treatment regimes, including dothiepin (225 mg *nocte*), mianserin (90 mg/day), flupenthixol (1 mg/day) and ECT (8 sessions), were administered unsuccessfully. In October 1986, she started on phenelzine (up to 60 mg/day) for four weeks, changing to tranylcypramine (10 mg b.d.) for the following six weeks. Both of which made no improvement to her condition, and were abandoned. Her mental state gradually showed evidence of more pronounced agitational symptoms, as well as obsessional and phobic traits. In November 1987 she took an overdose of tricyclic antidepressants, tranquillisers, and paracetamol.

In February 1988 she was started on chlorpromazine (up to 325 mg/day) and trazodone (100 mg t.d.s.), and a month later lithium and L-tryptophan were added (800 mg *nocte* and 3 gm/day respectively). This combination of drugs appeared to have made the first noticeable change in her depressed and agitated state, so that trazodone could be discontinued by April 1988. After four months it was decided to increase the chlorpromazine to 600 mg daily and on 21 July 1988 she was started on phenelzine (45 mg/day); other medication at the time remained unchanged, with lithium (800 mg *nocte*) and L-tryptophan (6 mg/day). Improvement of her symptoms allowed a reduction of the neuroleptic medication to 300 mg daily over four weeks, beginning in mid-July 1988. At that time the patient was well enough to go on a holiday to her sister's. During the journey she began to feel unwell and presented at a casualty department 36 hours later, having been found lying on the floor in an incontinent state. On admission she was incoherent in her speech, with marked reduction of her consciousness. Temperature was 38.8°C initially; muscular rigidity with cog-wheel phenomenon, as well as nystagmus, hyperreflexia and upgoing plantars, were present.

A tentative diagnosis of NMS was made and procyclidine (10 mg) was given. Blood samples for urea and electrolytes, full blood and differential count, blood cultures, MSU and lithium levels as well as random blood sugar proved normal. A CXR was clear and the CSF showed no cells or protein. Creatinine kinase was elevated at 408 IU. Within one hour of admission her temperature reached 42°C, at which point prophylactic antibiotics were started via a CVP line inserted in the meantime. Respiratory and cardiac arrest ensued shortly afterwards, and despite pacing and resuscitatory measures for over one hour, the patient died on 27 August 1988.

Post-mortem examination was essentially unremarkable, apart from a small haemorrhagic collection in the right pleural cavity and pulmonary oedema, which were attributed to resuscitation efforts and acute cardiac failure respectively.

Although this patient had been on neuroleptic therapy for six months, this had recently been reduced; the timing of the hyperpyrexia points more to it being an effect of her combined phenelzine, lithium, and L-tryptophan treatment. The effect of this is to increase brain 5-hydroxytryptamine, which has been demonstrated in animals to be associated with malignant hyperpyrexia (Grahame-Smith, 1970). We think that this and the previously reported case indicate the need for great caution when using 5-HT agonists, and that the particular combination of medication used here may be especially dangerous.

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HENDERSON & WOOTEN (1981) NMS: a pathogenetic role for dopamine receptor blockade? *Neurology*, **31**, 132–137.

*MPC Examination*

I What treatment should you employ to procure sleep in – 1. Acute delirious mania? 2. Acute melancholia? 3. Acute mania? 4. Simple melancholia? 5. The acute stage of general paralysis?

II What are the post-mortem appearances in the brain of patients dying – (a) In an attack of acute insanity? (b) After chronic insanity? (c) After general paralysis?

III What are the chief points to be noted in the diagnosis of general paralysis? What other disorders may simulate it?

IV What is the connection between insanity and epilepsy? How would the presence of the latter affect the diagnosis, prognosis, and treatment of the former?

V What is the duty of medical men as to recommending or discountenancing the marriage of a person who has had symptoms of insanity, or in whose family insanity exists?

VI When consulted about patients who have recently become insane, for which cases should you recommend an asylum and for which treatment in a private house?

## A HUNDRED YEARS AGO

### Medico-Psychological Association.

The following are the questions put to candidates at the recent examination held at Bethlem Hospital for the certificate in Psychological Medicine:-

### Reference

*Lancet*, 5 January 1889, 56.

*Researched by Henry Rollin, Emeritus Consultant Psychiatrist, Horton Hospital, Surrey*

*British Journal of Psychiatry* (1989), **154**, 579–580

# Books Reconsidered

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## *Child Care and the Growth of Love*: John Bowlby*

I now have two copies of this book: one bought in the first year of publication, the year of my matriculation at Oxford; and the second bought 35 years later, for the purpose of this review. It reports a study that was a major landmark, crossing the frontiers between the professions and disciplines concerned with child development and practical child care as well as psychoanalytical theory and practice. An early impression on this second reading was the appreciation of how much has happened in the intervening years. The changes are most marked in children's wards in hospitals where parents are welcomed throughout the day and often allowed to stay overnight. In the maternity wards, much emphasis is put on not just new mothers, but new fathers, being with their babies and enjoying the process of making friends with each other. The work started by Bowlby in looking at the needs of a young child for a close loving relationship with the mother or best substitute is continued every day in innumerable case conferences and in the Family Division of the High Court.

Much too has happened in child psychiatry. Family therapy, now used almost to the exclusion of all other therapeutic techniques in child guidance clinics, did not then exist. A huge amount of research has followed the first appearance of this book. Discussion was plentiful, and not without controversy, as in Michael Rutter's book *Maternal Deprivation Revisited*. This book tackled the scientific evidence behind Bowlby's statements, and no attempt will be made now to repeat or add to that argument.

The changes in paediatric wards include, however, not just a greater appreciation of the needs of young children, for which Bowlby must most certainly be thanked, but the almost complete disappearance of tuberculosis and poliomyelitis which has made long stays in children's hospital wards rare.

A new look at Bowlby's original work is timely. Despite the greater interest in the mutual needs of mothers and babies, there still remain many problems, such as the rarity of successful breast feeding in women in social classes IV and V. At times too many children seem to be taken into care on flimsy grounds, and yet there are the painful enquiries into the tragic consequences of decisions made by social workers trying to keep the family together at all cost.

Reading this book again with hindsight, there are a number of statements that are misleading or even dangerously wrong in 1988, e.g. "Mercifully, physical cruelty is rare". Should not the edition now selling well in the shops with its 1980s cover have something to indicate that it is 35 years old, that the "modern" research added in the second edition is 24 years old, and that much has been learnt since?

A whole chapter is devoted to illegitimate children. Since that time, the pill made its debut and abortion has become legalised. Yet still there are just as many illegitimate children. A major change is that few are nowadays available for adoption, and the emphasis has passed onto the permanent care in families of children who are handicapped, of different ethnic background, or who have had years of ill-treatment or deprivation. The psychiatric centres have not found any more effective remedies than the provision of "good enough" substitute parents. The development of adoption agencies, finally leading to the formation of the British Association for Adoption and Fostering, has been a major source of encouragement of research and new ways of caring for children previously thought unadoptable.

What has happened to the "preventive mental hygiene", as described here? There is little evidence that children are less emotionally disturbed or better behaved. Is there really any evidence that the generation left to cry as advocated by Truby King, the guru of 1930s mothers, have been failures as parents? That same generation of mothers were also prevented from intimate contact with their own babies, as Sister would hand them over neatly wrapped for feeding and remove them again afterwards, leaving the mother sadly to have to take Sister's word for it that the bundle really was a boy. Were these babies really heading for emotional disaster as claimed by one media-loving paediatrician? Certainly a lot of women were made unhappy by the thought that they had missed out on bonding and thus jeopardised their child's entire life. The references to the working mother can still cause pain, despite the reassuring findings of more recent research.

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*Based on the World Health Organization report Maternal Care and the Growth of Love. London: Pelican (1953). 2nd edn (1964) with M. S. Ainsworth; reprinted 1985.

Looking back over 35 years one can appreciate how, with the publication of Bowlby's book, thinking about and working with children took a dramatic change of direction. How few of us will have any of our work remembered in 2013?

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*British Journal of Psychiatry* (1989), **154**, 581–589

# Book Reviews

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Editor: Sidney Crown

**Child Sexual Abuse. A Handbook for Health Care and Legal Professionals.** Edited by Diane H. Schetky and Arthur H. Green. New York: Brunner/Mazel. 1988. 256 pp. $37.50.

The authors preliminary overview begins with a factual account of the development of sexual arousability from infancy onward. This is followed by a Freudian interpretation, the evidence for which is not discussed. Masson's attack on Freud for asserting that his patients' stories of childhood seduction were fantasies is quoted approvingly. Gross percentages obtained from population prevalence studies are quoted rather uncritically in view of varied definitions of abuse, which can include anything from indecent talk to rape. Characteristics attributed to incestuous fathers, such as unemployment and household tyranny, are cited without warning against generalisations from clinical referrals. Multifarious bad effects from abuse are mentioned – multiple personality, sociopathy, frigidity and prostitution – but with little indication of how often these sequelae are to be expected or to what extent attendant circumstances or trauma following disclosure may have contributed.

The clinical advice is authoritative but not uncontroversial. Numerous behavioural or somatic disorders occur in abused children, but "these are nonspecific". Anxiety that reporting to legal authorities will increase distress is "a valid concern", but it is best done immediately. Mothers, even if they have shielded a guilty father, need help with the legal, social, economic, and emotional consequences of disclosure. 'Anatomically correct' dolls should be used with caution. In one blind study judges shown videotapes of children playing with the dolls could not identify the ones abused. Chapter 5 provides a useful guide to physical examinations. Chapter 6 deals with false accusations, regrettably frequent in child custody disputes. Some supposed victims are treated until an admission of a non-event is extorted. Male victims, female offenders, sibling incest, and abuse in institutions are touched on in a short chapter. Becker & Kaplan's contribution on treating offenders concentrates on behaviour modification, for which facilities and personnel are more plentiful in America. The chapter on treating the child is more victim- than family-centred. "Salvaging the marriage should not always be a goal." It is impracticable to engage young children in group therapy based on the assumption of family dysfunction. Supportive groups for victims are thought "extremely effective". The lack of research into 'what works' is recognised.

The chapter on child pornography and prostitution gives interesting examples but cannot overcome the problems that the true extent of these phenomena is unknown and their manifestations are essentially culture-bound. American ways of coping with child witnesses may differ from ours, but the problems described are familiar, notably trauma and confusion from repeated interrogations of the child, delays in bringing cases to trial, and intimidatory courtroom procedures. The use of two-way TV, just beginning in England, seems to have had mixed results in the US. The concluding thoughts on prevention are speculative. The blurring of generation boundaries in everyday clothing and in the media is "sexploitation". Men threatened by today's "new woman and her independence" may turn to children. Mandatory reporting is an effective legal innovation. Stiffer penalties are advocated for those involved with child pornography or juvenile prostitution, for both providers and clients. Many criminologists, this reviewer included, believe that increasingly severe penalties are unlikely to prove effective, especially in matters of sex.

Altogether this is an informative and challenging compilation which cannot fail to help the practitioners at whom it is directed.

D. J. West, *Emeritus Professor of Clinical Criminology, Cambridge University*

**Remembering Reconsidered: Ecological and Traditional Approaches to the Study of Memory.** Edited by Ulric Neisser and Eugene Winograd. Cambridge: Cambridge University Press. 1988. 390 pp. £30.00.

This book is fairly technical, and makes few concessions to general readers. It is the outcome of a workshop symposium designed to provide a forum for experimental psychologists who are examining the adaptive significance of human memory in ordinary life. About half of the 15 chapters give detailed reports of investigations, while the remainder offer evaluations of these investigations or else develop themes about theory and method. An attractive feature is the amount of cross-reference among the contributors.

To indicate the flavour of the book's contents, Katherine Nelson describes ingenious studies into the adaptive functions of what young children remember. One function is to construct general event-schemas: particular experiences are remembered for a few months, but then, if not incorporated into an event-schema, tend to be forgotten. Nelson's work casts fresh light on the old problem of infantile amnesia. Wanda Wallace and David Rubin dissect the performances of traditional singers of American folk ballads and show clearly that their singing is not a matter of rote recall but, rather, of flexible remembering that is constrained by schemas for gist, poetics, rhythm, imagery, and music. Harry Bahrick and Elizabeth Phelps identify items of factual information that adults may once have known but have now forgotten, and demonstrate that minimal refresher courses on some of these facts have powerful effects in bringing the forgotten information back to mind. There are studies by William Brewer, Craig Barclay, and Peggy DeCooke of what adults remember of past experiences that they had recorded in diaries some time earlier. Lawrence Barsalou analyses the narrative forms in which adults recount their past experiences.

In the above contributions, and also in the others, there is attention to carefully gathered empirical evidence and, at the same time, regard for the functional roles of memory in the lives of people who are pursuing everyday purposes and developing their sense of a biographical self. Taken as a whole, this book registers substantial progress in extending the methods of experimental psychology so as to explore what most people would regard as the interesting questions about human memory.

IAN M. L. HUNTER, *Emeritus Professor of Psychology, Keele University, Staffordshire*

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**Melanie Klein Today: Developments in Theory and Practice. Volume 1: Mainly Theory.** Edited by ELIZABETH BOTT SPILLIUS. London: Routledge. 1988. 358 pp. £29.95 (hb), £14.95 (pb).

This book consists of 18 reprinted articles written by the major Kleinian analysts from 1952 onwards. It includes three papers each by Rosenfeld and Bion, two each by Segal and Meltzer, and one by Steiner. As far as psychiatry is concerned, the Kleinian project is an attempt to understand psychosis in terms of an interlocking group of concepts which include splitting, projective identification, envy, narcissistic destructiveness, and the balance between the paranoid/schizoid and depressive positions. Of these, the most distinctively Kleinian is perhaps projective identification, a process by which unwanted parts of the self are projected into objects (usually but not always people) in the environment with whom these disowned impulses are then identified. Thus the paranoid persons' persecutors represent split-off aggressive parts of the self. In normal development it is the mother's role to contain these projections until the child's ego is strong enough to reintroject them. The analyst, or more likely hospital environment, has a similar task with the schizophrenic, as well as attempting, through words, to move these projections from the concrete to the metaphorical. All this is important, helpful, and too often forgotten in everyday practice with schizophrenic patients. However, as many of the pieces in this book illustrate, Kleinian thinking can in three ways suffer from the very difficulties which it purports to explain. Firstly, by omnipotently confusing *descriptions* of psychotic processes with their explanation, it ignores the example of Downs syndrome, which, until the discovery of trisomy in 1956, was confidently thought to be due to trauma in pregnancy, and stands as a *caveat* for any psychological accounts of psychosis. Secondly, the over-valuation of the over-inclusive concept of projective identification means that it is often, as in schizophrenic thinking, reified into a 'symbolic equation' (Segal's term) rather than a useful metaphor. Thirdly, in the attribution of agency to the patients' unconscious destructiveness the analyst can become, as one of Segal's patients described her, a humourless 'vampire' feeding on the patient's inner world, in order, perhaps, to defend against the incomprehension and chaos, so well described by Bion, that is engendered by contact with psychosis. Thus this book provides a profile of Kleinian thought, both in its strengths and weaknesses. Psychiatrists unaware of the work of Rosenfeld, Bion and Steiner are at a distinct disadvantage in their work with schizophrenic patients, and for that reason the book is to be recommended, but beware: it does not make easy reading for the uninitiated.

JEREMY HOLMES, *Consultant Psychiatrist, Department of Psychiatry, North Devon District Hospital*

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**The Psychobiology of Bulimia Nervosa.** Edited by K. M. PIRKE, W. VANDEREYCKEN and D. PLOOG. Berlin: Springer-Verlag. 1988. 181 pp. Dm79.00.

This book is based partly on a recent international symposium, and presents up-to-date research and ideas on this challenging problem. It suffers the common disadvantage of such publications in being something of a hotchpotch, with frequent overlap among its 19 chapters. Nevertheless, it succeeds in demonstrating that there is much to be gained from a biopsychosocial analysis.

It is organised in four parts, preceded by an introductory chapter by Peter Beumont, who highlights the current controversy over the definition and classification of bulimic disorders. In Part I, nutrition and behaviour, the main theme is of culturally-mediated dietary restraint leading to a variety of abnormalities. Particularly interesting was Fichter *et al*'s chapter, which describes evidence that neuroendocrine disturbances may result from reduced caloric intake not just in eating disorders, but also in normal weight subjects and sufferers from depression.

Part II highlights the metabolic and endocrine aspects of eating disorders. Schweiger *et al*, for example, demonstrate that in spite of their weight status, bulimic patients are often effectively in a state of starvation. This state of nutritional deprivation seems to be responsible for a whole host of biochemical alterations. Laessle *et al* draw attention to the fact that depression in bulimics is no more common than in many other psychiatric conditions, and that it may be secondary to low carbohydrate intake. Similar themes can be detected in Part III, which describes a variety of hunger and satiety deficits in eating disorders.

In Part IV, on the treatment of bulimia nervosa, there is evidence that a variety of interventions can produce marked improvement in bulimic and related symptoms. I was particularly interested, if not a little surprised, by Chris Fairburn's contribution. In spite of his fame in developing the cognitive-behavioural approach, he recommends caution over the 'cognitive zeitgeist' and that due attention be paid to other views and approaches to treatment.

The overall message seems to be that, while psychosocial factors may be most pronounced in explaining the origins of bulimia nervosa, biological changes play an important part in maintaining the disorder. Although this book is unlikely to satisfy the appetite of the average practitioner, it can be recommended as a useful resource for specialist researchers and clinicians.

ERIC BUTTON, *Lecturer in Clinical Psychology, Department of Psychiatry, University of Southampton*

**Annual Progress in Child Psychiatry and Child Development – 1987.** Edited by STELLA CHESS, ALEXANDER THOMAS and MARGARET HERTZIG. New York: Brunner/Mazel. 1988. 632 pp. $54.50.

This is the 20th volume in this series, a fact which surely attests to the value of the project. Moreover, the editors are probably right in suggesting that with the proliferation of journals and the great increase in published research, the need increases each year for a distillation of the most significant publications in their field. The editors currently monitor some 100 journals, and this time they have selected 32 papers for re-publication. The task of review and selection must be an increasingly taxing one, and to assist them the two original editors have now recruited Hertzig as co-editor.

How well have they performed their challenging task? Remarkably, but perhaps not surprisingly, they have kept up the high standard of previous volumes. They have selected an interesting mixture of review articles and papers describing original research. These cover a wide range of topics. The book drew my attention to a number of important papers I had not seen, most of them published in journals I do not regularly read. (How many of us can even scan regularly the contents of 100 journals?)

It might be asked whether we need *Annual Progress* books in this age of computers and data bases which can swiftly search the published literature on any field for us. I believe that the answer is a resounding "yes". For one thing, computerised searches do not tell you where the important advances are occurring; in fields not closely related to one's immediate clinical or research activities, this can be hard to discover. For another, they are a poor guide to quality. Thirdly, they do not provide a well-produced, carefully edited and attractive volume you can browse through whenever you have a few spare minutes. This volume also has 20-year author and subject indexes, making it a useful reference source.

These books can only complement our regular reading in the fields of special interest to each of us, but for that purpose this volume, like earlier ones, is recommended.

PHILIP BARKER, *Professor of Psychiatry and Paediatrics, University of Calgary, Canada*

**Anorexia and Bulimia Nervosa: Practical Approaches.** Edited by DEREK SCOTT. London: Croom Helm. 1988. 214 pp. £25.00.

This is a collection of 16 chapters intended both to provide a concise summary of available information on anorexia and bulimia and to give practical "how to do it" advice to the whole multidisciplinary team on caring for clients with such problems. This is a worthwhile aim, but is not fully realised by Scott and his contributors.

Certainly there are good chapters, such as those on self-help, ethics, dietary factors, and the sub-groups of male and child anorexics. However, there are also significant gaps in particular chapters, a patchy coverage of the whole field, and perhaps most significantly for a practical guide book, a lack of case histories or clinical illustrations of therapy approaches.

The book has three sections, beginning with an overview. Here I found some well-written material. However, I would have liked to see the disorders put into the context of normal eating behaviour, with some mention of the important body of research on restraint and counter-regulation. The discussion of diagnosis is brief, and does not include the latest revisions to DSM–III, while the chapter on assessment looks only at questionnaires and does not address the need for broader measures of behaviour, family dynamics, etc. The second section ('Some frameworks') is uneven, with the best chapter being on family approaches. Those on psychoanalytical/feminist and cognitive/behavioural approaches seem too condensed to do justice to their fields. The third and longest section is labelled 'Individual roles', but actually ranges wider than this. It contains some of the better chapters, but they are not comprehensive (e.g. there is no mention of the role of the psychiatrist or psychologist), and there is little attempt to apply the theoretical perspectives of earlier sections, so that one is not left with any sense of a cohesive approach to treatment.

This is a book which has useful aspects and may appeal to some, but I will personally continue to recommend *Pathology of Eating: Psychology and Treatment* (Gilbert; Routledge & Kegan Paul, 1986) to people wanting an overview of eating problems, and selective reading of *Handbook of Psychotherapy for Anorexia Nervosa and Bulimia* (Garner & Garfinkel; Guilford, 1985) for those who want a really detailed look at how to set up effective treatment programmes.

KENNETH GORDON, *Top Grade Psychologist, Winchester Health Authority*

**Adult Abnormal Psychology.** Edited by EDGAR MILLER and PETER J. COOPER. Edinburgh: Churchill Livingstone. 1988. 380 pp.

Abnormal psychology is the study of abnormal thought and behaviour, and provides the theoretical underpinning for the practice of clinical psychology and psychiatry. It therefore provides a bridge between academic experimental psychology and clinical practice. Traffic over this bridge tends to be in one direction only, from experimental to clinical psychology. However, some experimental psychologists are beginning to realise that study of abnormal functioning can provide vital information about how normal processes must work. This is particularly the case for studies of memory (amnesia and dementia), language (aphasia and dyslexia), and movement control (Parkinson's disease).

The somewhat awkward title of this book is not meant to imply that abnormal psychology has come of age, but indicates that the scope of this book is limited to the types of patient commonly encountered in an adult psychiatric clinic. As a consequence, some interesting problems in abnormal psychology, in particular neurological and developmental disorders, are omitted. Complete coverage of abnormal psychology would require several volumes, but the topics chosen for the present volume will, I fear, reduce its interest for readers not working in adult psychiatric clinics. This is a pity, since the chapters all provide excellent summaries of current thinking on the topics chosen.

There are two useful chapters on classification and methodology, and a fascinating account of the history of abnormal psychology. Thereafter the material is organised by diagnosis. These chapters work best when there are strong links with experimental psychology, as is the case for the chapters on schizophrenia, depression, and anxiety in which a number of models are presented which can be tested experimentally. This approach is particularly exciting when links can be generated right through from abnormal behaviour via psychological processes to associated brain disorders. This possibility is hinted at in the chapter on psychological models of schizophrenia, and considered in some detail in the chapter on anxiety. The remaining chapters tend to be much more clinically orientated, simply because there is so little relevant experimental psychology to draw upon. In the case of hysteria, for example, it is not possible to do more than discuss whether this entity really exists and if so how to define it.

This is an excellent book for all those working in adult psychiatric clinics who wish to think about the theoretical basis for the behaviour they see and their attempts to change it.

CHRIS FRITH, *Psychologist, Clinical Research Centre, Harrow*

**Treating Problem Children: Issues, Methods and Practice.** By MASUD HOGHUGHI *et al.* London: Sage Publications. 1988. 302 pp. £27.50 (hb), £12.95 (pb).

Anyone who works with disturbed children is aware that there is almost always a large cohort of assorted workers involved in trying to deal with the problems presented by any given child. There is a need for communication, liaison, and co-operation between these professionals and by-workers, in order to avoid fragmentation of approach and dilution of effort. The authors of this book, who have several decades of experience between them of working with disturbed children, hold firmly to the view that "all children should be treated as children first and problem children second". To this end, their book offers a way of looking at the child as integrated and whole, rather than as a collection of problems. Recognising the great overlap and similarities in the work of the different agencies and disciplines whose focus is on children and families, the authors' aim has also been to emphasise these and suggest a common structure which these diverse practitioners could use to identify problems, define goals of intervention, and evaluate methods and techniques they could employ.

The book is presented in three parts. The first looks at issues in treatment, and discusses concepts, ethics, approaches to treatment, organisation of resources, and the practice of treatment. This important section explores the moral, social, and professional aspects of treatment, which is defined as "an active, coherent response by a person, system or organisation to another person".

Part Two provides a comprehensive guide to the varied treatment methods. The authors use their own system of classifying these, based on the particular form of intervention. There is useful discussion within each section of classification on the methods of treatment and the variants of the methods, distinguished in this text as the techniques. The practice and application of each method and technique are also given careful consideration.

'The master code' is contained in Part Three, and is intended by the authors as a reference chart for treatment planning and practice. It complements the classification of problem areas set out in Part Two, and provides the reader with an immediate source of ideas and appropriate treatment responses in routine daily work with problem children. This is a most valuable compendium.

This book succeeds in condensing an enormous field without losing clarity or detail where necessary, and gives copious references for further reading and information on each section. I am sure that it will have wide appeal across the whole spectrum of child and family-oriented workers.

PAMELA WILLS, *Consultant Psychiatrist, Department of Child and Family Psychiatry, Royal Hospital for Sick Children, Edinburgh*

**The Technique at Issue: Controversies in Psychoanalysis from Freud and Ferenczi to Michael Balint.** By ANDRE HAYNAL. London: Karma Books. 1988. 202 pp. £13.50.

How pleasant to meet Dr Haynal, who picks up a subject potentially heavy to the mind and makes of it a stylish, lively story, that can be read with profitable pleasure in an evening. Spiced with anecdotes from the lives of his three main protagonists, this study of the river of controversy flowing through psychoanalysis since its early days gives one a sparkling overview of the turbulent waters, and follows the mainstream through to the present. In the beginning was Freud, and for a decade or so, the Word *was* Freud. But then came a challenger from the East – Hungary: Ferenczi, at one and the same time Freud's most ardent, loyal supporter (and analysand), and yet, of all the first-generation followers, the one who pushed the boundaries irretrievably onwards and outwards, and pioneered new ground to the end of his days. Where Freud concentrated on theory, Ferenczi's great love was expansion of technique; Freud saw the patient as an object of rational study, yielding new insights for his model of the mind, whereas Ferenczi saw the patient as a suffering person interacting with, and affecting, the analyst. Freud, with genius, constructed a 'one-person psychology'; Ferenczi, with intuition, opened up the whole field of 'two-person psychology'. Freud knew about transference and counter-transference, but was rather afraid of them; Ferenczi embraced both as the best instruments for our purpose. Freud would have argued that "developing theory will further technique", and he used the 'classical' method of cognitive, didactic insights and reconstruction of memory. Ferenczi's view could be summarised as: "developing technique will produce theory", and he evolved the 'object-related' method with high levels of transference and counter-transference work, interactive empathy, and the use of regression. Balint took up where Ferenczi left off, and the spotlight moved again on to the analyst himself as a whole person, and not only on his use of counter-transference. Level-headed in furious controversy, Balint deepened and refined the study of regression as a valuable analytical experience.

But, with all the vigorous arguments down the years, often advanced with quasi-religious fervour, the British Society, enriched by the immigration of analysts of all shades of opinion, has held to one view dear to Freud's heart, namely, that it is better for the health of psychoanalysis that its practitioners hang together, containing pluralism and controversy, rather than fragment; and this we do, knowing that the coherent strength of psychoanalysis lives in its aim and its topic (mental health and the abysses of the mind) and that this is not weakened by a multiplicity of personalities, styles, theories, or techniques.

NINA E. C. COLTART, *Psychoanalyst*

**Trends in Law and Mental Health.** Edited by FRANS KOENRAADT and MICHAEL ZEEGERS. Arnhem, The Netherlands: Gouda Quint. 1988. 463 pp. Dfl75.00.

This volume records the proceedings of the International Congress on Law and Mental Health, held in Amsterdam in June 1987. The 45 papers are in six sections: legislation and mental illness, medical (*sic*), legal problems, mentally ill offenders, psychiatric services in prisons, and a small general section. Most papers originated in Holland (14 papers), followed by Canada (8), Federal Republic of Germany (6), USA (5), UK (4), and one each from Israel, Australia, Nigeria, Poland, Finland, Japan, Yugoslavia, and Italy. The majority of contributors were lawyers; others included criminologists, sociologists, and psychiatrists. Four papers are in French.

The problem with a volume like this is that criticism of extant practice, often with moral and philosophical overtones and suggestions for reform, means very little to non-cognoscenti. Thus subjects such as criminal responsibility, the right to refuse treatment, and the interaction between criminal and juridical approaches do not have universal applications but are determined by the particular mental health and criminal justice systems in which they develop.

To have produced such a volume in one year is a notable achievement. However, the English translation leaves a lot to be desired. Take, for example, the last sentence of Maurizio Mannocci's paper 'Experience of an Italian psychiatric facility for prisoners': "In front of all these jail's problems my personal optimism arises quite from this bad reality, where, however, it was done so far that I am sure that very little changes will give fast and big improvements."

PAUL BOWDEN, *Consultant Forensic Psychiatrist, The Maudsley Hospital, London*

**The Alcoholic Family. Drinking Problems in a Family Context.** By PETER STEINGLASS with LINDA A. BENNETT, STEVEN J. WOLIN and DAVID REISS. London: Hutchison. 1988. (Basic Books, 1987). 381 pp. £25.00.

Graham Swift, in his finely woven tapestry of a family history novel, *Waterland* (Heinemann, 1983), says of the current generation: "Since you cannot dispose of the past, since things must be, they had to make do." Those of us who deal with families where one member is designated as having alcohol problems are painfully aware of that. What Steinglass *et al* do for us in this book is chart that process of "making do".

While recognising that these families are more different than similar, the phases and the patterns that many of them demonstrate can be understood by examining their family histories, and by exploring the rituals, the routines, and their problem-solving. So this book describes ordinary family life development and compares it with the arrests and distortions which occur when problematic alcohol use is a major feature of family life.

The book consists of six parts: 'A family systems approach to alcoholism', 'The life history of the alcoholic family', sections on the early, middle and late phases of the development of such a family, and finally its treatment. There is a good supply of references, which mercifully are not monopolised by the authors' own work. The book is tightly structured and clearly and evocatively written, with numerous real-life clinical examples. Each part has an introduction and conclusion which link the parts of the book together naturally, with helpful repetition.

This is manifestly the work of precise, perceptive clinicians who have the added ability to 'change gear' into complex clinical research methodologies. Again and again, clinical observations are made; hypotheses are then generated and tested. The results are presented, conclusions drawn, and then off go the authors onto the next set of observations and a repeat of the process. Thus, gradually, the images of the families, their rules and the impact of the alcohol become clear. The "making do" makes sense.

It is possible to criticise the book – in particular, its rather short and dogmatically abstinence-oriented treatment part, especially when earlier in the book there is a description of the usefulness of a family member's drinking (to trigger the intoxicated family system which can have real short-term problem-solving benefits). This bias may well be the consequence of the heritage of the North American 'alcoholism movement'.

It would have been better for the authors not to try to discuss treatment at all; to leave this book as an elegant account of family processes and the impact someone's drinking may have upon them. That would leave room for the sequel on treatment implications of these observations – Steinglass II!

This book is important. It is not too difficult to predict that it will become a signpost to the alcohol field of the same significance as McAndrew & Edgerton's *Drunken Compartment* (Nelson, 1969) or Orford's *Excessive Appetites* (Wiley, 1985). The authors confess that after "examining couples and whole families with alcohol problems, even during episodes of intoxication, our research perspective has never been the same". Clinicians reading this book may well be subjected to the same transformation.

DOUGLAS CAMERON, *Consultant Psychiatrist, Leicestershire Community Alcohol Services*

**Psychiatry Update: American Psychiatric Association Annual Review, Volume 6.** Edited by ROBERT E. HALES and ALLEN J. FRANCES. Washington: American Psychiatric Press. 1987. 852 pp. £25.00 (pb), £55.00 (hb).

This is the sixth annual *Psychiatry Update* published by the American Psychiatric Association. Of the 68 contributors, all but Michael Rutter work in North America.

There are six sections, each dealing with a broad topic and each containing several review chapters. Section I, which deals with bipolar disorders, is well written and covers the topic thoroughly. Section II, on neuroscience techniques in clinical psychiatry, is interesting and contains much new information. Section III is concerned with "differential therapeutics", which means the selection of a specific treatment for a specific patient. This is a weak and disappointing section, in which one chapter considers whether the patient needs individual, group, or family treatment while another considers the indications for psychodynamic, behavioural, or cognitive treatment. The token chapter on pharmacological treatment deals inadequately with topics dealt with in full in other sections.

Section IV is an informative set of reviews on violence and the violent patient. The general tendency towards over-inclusiveness, however, is shown by the mention of Wilson's disease, normal pressure hydrocephalus, and Cushing's syndrome in a table of organic mental disorders associated with violent behaviour. Section V, on epidemiology, edited by Myrna Weissman, justifies the entire volume. The first chapter, by Weissman herself, is a splendid introduction to the topic. Equally good is the second chapter, by Lee Robins, on diagnosis in epidemiological studies. The rest of the section at least approximates to these high standards. Section VI, on unwanted drug effects and interactions, is well written. One of the section editors writes an afterword in which he cites various anecdotal reports that might help mitigate some of the untoward effects mentioned by his authors.

It appears that the editors chose the six topics and then the section editors. They in turn chose authors to write appropriate chapters. This makes for exhaustive inclusiveness and for the expression of all possible points of view, but not for any uniform outlook. As the section editors of the first section say, "An edited volume exposes the reader to a variety of different perspectives . . . on the other hand, the level of integration and synthesis possible in a book authored by one or two individuals simply cannot be achieved in a collection of chapters . . . conceived and written largely independently of one another". Well said!

J. L. GIBBONS, *Emeritus Professor of Psychiatry, University of Southampton*

**Essential Psychology for Medical Practice.** By ANDREW MATTHEWS and ANDREW STEPTOE. Edinburgh: Churchill Livingstone. 1988. 171 pp. £7.50.

The authors, psychologists involved in teaching medical students, have aimed to "develop a single concise source that would convey the essentials of psychological knowledge required for medical practice". The book is written in a textbook fashion rather than in note form. There are liberal numbers of headings and subheadings, tables, and diagrams. The breadth of coverage is quite impressive, ranging from the function of the brain to more clinically-orientated chapters on the psychology of the pain and communications between doctors and patients. This is the main strength of the book. Other endearing qualities are the use of highlighted areas of clinical importance and study questions at the end of chapters to facilitate learning. The book is very readable, but postgraduates may find it more useful than undergraduates.

SEAN LYNCH, *Lecturer in Psychiatry, St Mary's Hospital, London*

**Ethical Issues in the Psychotherapies.** By MARTIN LAKIN. Oxford: Oxford University Press. 1988. 174 pp. £20.00.

This lucid and readable book uses an adjective which neither I nor the Oxford English Dictionary had previously encountered. In a section dealing with psychotherapists whose interventions are determined by their own needs, whose responses are excessively aloof or intrusive, who seek personal gratification at their patients' expense and display inconsistent and exploitative behaviour, Lakin refers to these therapists as "psychonoxious", and it seems to be an excellent and necessary term. That it needed to be discovered, however, does indicate the difficulties inherent in this subject. While people have long been preoccupied by the issues surrounding ethical behaviour, the investigation of such issues within the context of the therapeutic alliance is necessarily recent. It is to the author's credit that to read his book is to be left with more questions than answers. Psychotherapy is neither a religion nor a business, but its ethical concerns pertain to both. Optimally, it requires of the patient a preparedness not only to trust the judgement of his therapist but also to trust in him or her to the extent of permitting an intimate relationship to develop; yet there is also the awareness, implicit or explicit, of a contract between patient and therapist, with all that that implies in terms of expectations, obligations, profits, losses, and risks on both sides. Most readers will readily have distanced themselves from the "psychonoxious" therapists described above; however, as Lakin painstakingly illustrates, few therapists, after a little guided reflection, would be prepared to cast the first stone. When does 'confrontation' cease to be therapeutic and become abusive? When is a paradoxical intervention honest and not deceitful? When is a family therapist active and when is he directive? In the context of a treatment which regards psychic pain as part of the process, how much pain is it acceptable to inflict? When is an employee maladjusted and when is he simply out of favour with his boss? When is treatment unethical and when is it simply incompetent and is there a difference?

In order to illustrate the ethical problems with which he deals, the author interviewed 100 or so practitioners who specialised in various therapeutic treatments. What struck him most forcibly in the course of analysing his results was the 'garden variety' of ethical dilemmas encountered in daily practice. He outlines these in his first chapter, and then moves on to a general consideration of the negative effects of the psychotherapies and the effects on the therapists themselves of the ideologies and value systems inherent in their professional training. There are separate chapters on the ethical dilemmas peculiar to family therapy, group work, and individual treatment and an attempt is made to draw some comparisons between these various approaches. This is the least successful part of his book, since in the attempt to reduce the complexity of his subject he comes close to falsifying it. What is important about his argument, however, is that no therapeutic treatment can be value-free; the issue is whether the values are those of the patient or the therapist. Here Lakin is thorough in his attention to the difficult issues raised by matters of religious faith, cultural affiliations, and traditional values.

The strength of this book is that, like good therapy, it promotes understanding of the dilemmas faced by all concerned. It is anxious that the patient should be protected, and yet gives full consideration to the vulnerabilities of the therapist. The author reminds us of the growing preparedness of patients to sue for negligent or improper treatment, but asks whether a genuine attempt to obtain a patient's informed consent may not, necessarily, undermine or render impossible the subsequent course of therapy. Lakin ends with a chapter entitled 'Where we are now, where we go from here'. The best preventive measure to deal with the possibility of unethical conduct by psychotherapists is, he states, personal therapy as an integral part of their professional training. While endorsing that, I also recommend that they read this book.

Jane Campbell, *Associate Therapist, Department of Psychotherapy, Warneford Hospital, Oxford*

**Current Issues in Clinical Psychology 1986.** Edited by Nadine Eisenberg and David Glasgow. Aldershot: Gower. 1988. 218 pp. £25.00, $50.00.

This volume presents the proceedings of the 1986 Annual Merseyside Conference of Clinical Psychology. Thus there is a variability of standards within the contributions. However, most of the chapters are readable and informative and all are short.

The four topic areas selected for this volume are: 'Rehabilitation of the head injured'; 'Giving psychology away'; 'Riots, war and the bomb'; and 'Psychiatric rehabilitation'. All five chapters in this first section highlight the failure of acute medicine to cope with the chronic problems of the head-injured and the paucity of services for these patients.

The next section highlights the current dilemmas within clinical psychology: should psychologists maintain a closed shop, train everyone else in psychological methods, or become managers? Those who thought clinical psychology was a homogeneous profession may be surprised to find we may be in danger of tearing ourselves apart.

The section on riots and war, although uneven, did raise important issues. The chapter by Ayalon on the effects of terrorism on the civilian population in Israel is especially worth mentioning.

The section on psychiatric rehabilitation is perhaps the patchiest, but of interest is the chapter by Birchwood & Smith, who describe a joint-funded programme run by clinical psychologists. This programme provides an integrated service for sufferers from schizophrenia and their families, including family intervention and management; identification of prodromal signs of relapse and low dose medication; and finally training for patients in self-control of persistent symptoms.

In summary, this is a good book of its kind.

Nicholas Tarrier, *Top Grade Clinical Psychologist, Prestwich Hospital*

**Early Prediction and Prevention of Child Abuse.** Edited by Kevin Browne, Cliff Davies and Peter Stratton. Chichester: John Wiley. 1988. 315 pp. £9.50.

The term 'child abuse' is increasingly being used to describe any act of commission or omission on the part of a parent or other 'carer' which society finds unacceptable and which is presumed to be harmful, whether or not it involves physical injury, neglect of basic necessities, or inappropriate sexual activities. Its moral and shameful connotations leads to concealment, so that its prediction and prevention are made particularly difficult.

This book, based on a conference, includes contributions from 22 authors with a wide range of interests and perspectives. The majority of them work in Britain. One or two of the chapters are noteworthy. Chapter 9, written by Jim Stevenson from the Psychology Department of Surrey University and his colleagues, describes a controlled trial of the efficacy of training health visitors to use behavioural management techniques. Although the attempt was unsuccessful, the design of their study and their discussion is well worth reading. Chapter 14, by Rory Nicol, Professor of Child Psychiatry at the University of Leicester, discusses the treatment of child abuse in the home in an interesting and informative way. The account of the Minneapolis mother–child project by Byron Egeland in chapter 6 is also a useful contribution, particularly in the implications for breaking the cycle of abuse across generations. Although some of the other chapters do provide helpful information and may be worth dipping into, I found most of the book unsatisfactory. There is a considerable variation in the 'hardness' of the research described, and some of the work reported is frankly controversial, such as the chapter by Helga Hanks, Chris Hobbs and Jane Wynne on signs of sexual abuse in the pre-school child.

There are many better books recently published on child abuse in general and child sexual abuse in particular. Except for the chapters described above, I would not recommend this one.

Ian Berg, *Consultant Child Psychiatrist, High Royds Hospital, Menston, West Yorkshire*

**Sensory Deception: A Scientific Analysis of Hallucination.** By Peter D. Slade and Richard P. Bentall. London: Croom Helm. 1988. 285 pp. £22.50.

Psychiatrists tend to adopt a somewhat simplistic approach to hallucinations experienced by their patients – is it organic or functional in origin? one voice or more? heard through the ears or in the head? and so on. This book by two clinical psychologists seeks to present a more comprehensive account of the phenomenon. It reviews not only the traditional biological theories and pharmacotherapy of hallucinations in schizophrenia and other disorders, but also looks at psychosocial theories of causation and possible psychological treatments in drug-resistant cases. Although rather brief in content, it manages to include an extensive coverage of the available literature on the subject, paying particular attention to the occurrence of hallucinations in healthy individuals, and suggesting that all forms of sensory deception lie on a continuum with 'normal' mental states.

The authors propose an integrative aetiological model which presents hallucination as a deficiency of reality discrimination and refers to much of the recent research into metacognition. This model attempts to explain how various factors, such as stress-induced arousal, sensory deprivation, reinforcement, and expectancy, may cause a person to fail to discriminate the real from the imagined under certain circumstances, and thereby hallucinate.

Overall, the book is clear and concise, without using too much psychological jargon, and there is a great deal to stimulate the reader. Unfortunately, the authors are somewhat dismissive of the wealth of research into the genetic and biochemical theories of schizophrenia (and by inference, hallucinations), citing methodological faults in the numerous studies previously undertaken. However, when advocating the case for psychological treatments, which they strongly favour, they mostly quote single-patient studies as evidence for their efficacy. This seems a biased approach but, nevertheless, it is a useful and enjoyable book which will interest psychiatrists and other mental health workers.

J. J. HART, *Senior Registrar, Department of Psychiatry, The London Hospital*

**A Casebook in Time-Limited Psychotherapy.** By JAMES MANN and ROBERT GOLDMAN. Washington, DC: American Psychiatric Press. 1987. 179 pp. £11.95.

Time-limited psychotherapy, well illustrated in this paperback edition of the original casebook, offers a brief psychotherapeutic model revolving, like Euclidean geometry, on acceptance of two principles (or axioms): (a) consistent emphasis on the time limit of 12 sessions, thereby heightening key transference issues of separation and loss which are addressed later in therapy; and (b) clarification of and presentation to the patient of the 'central issue' (a lifelong painful self-perception) whose antecedents and maintaining factors are discovered and worked through in therapy by linking it with the first principle.

Contrasting their system with that of Sifneos and Malan, the authors make an unsubstantiated claim to be able to reach a wider clientele having more severe and pre-Oedipal conflicts. The first four chapters deal with the treatment model, connecting time-related factors and case and central issue selection. This is a coherent synopsis of Mann's *Time-Limited Psychotherapy* drawing on a wide, if eclectic, range of theories, and threatening occasionally to become a mish-mash rather than a synthesis, with a relative inattention to countertransference and short-circuiting of transference issues.

This is offset by the following six chapters, which are excellent, if predictably teleological, case illustrations including phobic and hypochondriacal reactions, hysterical conversion, and character neuroses. Hysteria is over-represented, however, at the expense of other conditions.

I would recommend the book, especially to trainees interested in brief psychotherapy, with the proviso that the advantages of this particular method are something which only time will tell.

DAVID FAINMAN, *Registrar in Psychiatry, The London Hospital*

**Psychosomatic Medicine Past and Future.** Edited by GEORGE N. CHRISTODOULOU. New York: Plenum. 1987. 380 pp. $65.00.

This volume of selected contributions to the 16th European Conference on Psychosomatic Research (1986) should be full of riches. They are hard to find, due to a limited and inaccurate subject index. Other criticisms are the typeface presentation, with superscripts overlapping the line above, and the fact that no attempt has been made to correct widespread errors of written English, which would have been perfectly acceptable in the spoken context of an international conference (... "we are studying since many years ...").

The collection contains some readable and interesting historical reviews, and judicious dipping in also gives a sense of international perspective in this complicated subject. It is interesting that some papers still retain the traditional psychosomatic medicine approach wherein some conditions are perceived as more 'psychosomatic' than others. I do not feel this volume is worth its price, except for the large departmental library with a special liaison interest.

JUDITH ANDERSON, *Senior Lecturer, Department of Psychiatry, University of Leicester, and Consultant, Rauceby Hospital, South Lincs*

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# The Womb Lay Still in Ancient Egypt

HAROLD MERSKEY and PAUL POTTER

Any reader of the handbooks of medical history will know that among the ancient Greeks, the womb was on occasion held to cause various complaints by moving about the body. A particularly graphic account is to be found in the *Timaeus* (91b–c), where, in likening sexual desire to an actual animal, Plato first mentions "... in men the organ of generation becoming rebellious and masterful like an animal disobedient to reason", and then alludes to:

> "... the so-called womb or matrix of women. The animal within them is desirous of procreating children, and when remaining unfruitful long beyond its proper time, gets discontented and angry, and wandering in every direction through the body, closes up the passages of the breath, and, by obstructing respiration, drives them to extremity, causing all varieties of disease ..." (Jowett, 1953)

To what extent other Greek authors accepted the underlying principle of this unmistakably poetic depiction may be a matter for another discussion; here we examine the suggestion made by several leading historians of medicine that the notion of the wandering uterus existed even earlier, among the ancient Egyptians.

Two Egyptian papyri constitute our principal sources on this topic: the Kahun Gynaecological Papyrus (c. 1900 BC, named after its place of discovery), and the Georg Ebers Papyrus (c. 1550 BC, named after its European purchaser). The Kahun Gynaecological Papyrus, which was first edited and translated into English by F. L. Griffith (Griffith, 1898), consists of 34 gynaecological prescriptions occupying three pages. The Ebers Papyrus, about a fifth of which, incidentally, was lost during its storage at the time of World War II, had been definitively edited in 1913 by W. Wreszinski (1913). In 1937 the Norwegian physician B. Ebbell provided a complete English translation (Ebbell, 1937). The Ebers Papyrus' 108 columns of writing deal mainly with internal medicine.

H. E. Sigerist (1951) quotes the Kahun Gynaecological Papyrus from Griffith's publication, to suggest that a variety of symptoms are ascribed to a uterus that has moved up or down, is biting, or starving, or restless. He states further (p. 355):

> "... we encounter the view that the major organs, the heart, the uterus, the stomach, the vessels, and others, had some life of their own. They were able to wander around in the body, had appetites, whims, moods and had to be satisfied and pacified. This was a left-over of mythological views which persisted for a very long time."

B. Ebbell, in the introduction to his translation of the Ebers Papyrus (p. 23), notes in passing that the Kahun Papyrus speaks of diseases in women and explains them as due to morbid states in the uterus or to a wandering uterus. He, too, bases his comments on the Griffith edition.

On the history of hysteria itself, the only comprehensive monograph in English is Ilza Veith's *Hysteria. The History of a Disease* (Veith, 1965). She likewise relies on Griffith for her evaluation of the Kahun Papyrus, strangely making no reference to the definitive modern scholarly treatment of Egyptian medicine, Hermann Grapow's *Grundriss der Medizin der alten Aegypter* (Grapow, 1954–1973). In this nine-volume work, a complete German translation of all the extant ancient Egyptian medical papyri, by H. von Deines, H. Grapow, and W. Westendorf, occupies volumes IV/1 and IV/2 (1958). Basing her opinion on the Griffith version, Veith emphasizes (p. 3)

> "that certain behavioral disorders were associated with the generative organs, and specifically with aberrations in the *position* of the womb. This was so firmly established that no other explanation for the symptoms was so much as suggested." (her italics).

As illustrations, she quotes several cases from the papyrus:

> "'a woman who loves bed; she does not rise and does not shake it,' another woman 'who is ill in seeing' and who has a pain in her neck, a third 'woman pained in her teeth and jaws; she knows not how to open her mouth,' and, finally, 'a woman aching in all her limbs with pain in the sockets of her eyes.' These and similar disturbances were believed to be caused by 'starvation' of the uterus or by its upward dislocation with a consequent crowding of the other organs. The physician's efforts were therefore quite logically directed towards nourishing the hungry organ or returning it to the place from which it had strayed ... attempts were made to lure or drive the organ back as if it were a living, independent organism. The parts were fumigated with precious and sweet-smelling substances to attract the womb; or evil-tasting and foul-smelling substances were

> ingested or inhaled to repel the organ and drive it away from the upper part of the body where it was thought to have wandered."

Veith further cites Ebbell's text of the Ebers Papyrus to support her hypothesis (p. 4ff.):

> "Among the elaborations are the detailed prescriptions 'to cause a woman's womb to go to its place'. The remedies and their modes of application show the highly imaginative approaches by which control of hysterical symptoms was attempted. One prescription, a potion composed of tar from the wood of a ship and the dregs of beer, was supposed, by its evil taste, to induce the descent of the uterus. Other recipes listed ointments, compounded from a variety of unpleasant ingredients, that were used to rub the affected parts of the body in order to drive down the uterus. One such ointment was composed of dry excrement moistened with beer: 'The fingers of the woman are rubbed with it; thou shalt apply it to all her limbs and to her diseased place.' . . . Further modes of treatment are described wherein fumigation by means of fragrant and powerful substances is used. Among these, 'dry excrement of men is placed on frankincense, and the woman is fumigated therewith; let the fume thereof enter into her vulva.' . . . this particular prescription suggests a deliberate choice. The implication of gratifying the uterus with discharges from the opposite sex cannot be disregarded.
>
> As a final measure '. . . to cause the womb to go back to its place: an ibis of wax is placed on charcoal, and let the fumes thereof enter into her vulva."

Veith explains this prescription as a magical remedy based upon reverence for the god Thoth, whose symbol is the ibis. She argues that the image of the powerful male deity was used to lure back a wandering female organ.

Veith herself admits (p. 6) that the ideas she puts forward "are nowhere spelled out in detail". In fact, the actual texts themselves never give any indication at all of the rationale for the measures they promulgate. Veith's explanatory statements, then, are strictly her own interpretations. For example, the remedy in which tar is used reads (Ebers 791): "Oakum tar (?) that is on the wood of a ship . . . is rubbed with dregs of excellent beer, and let her drink it". The implied purpose of the remedy is (Ebers 789) "to cause a woman's womb to go to its place". According to Veith, the evil taste of this medicine is intended to make the womb descend. It could equally be argued that this orally administered remedy is simply to put right a prolapsed uterus: in this case, the whole series of Veith's interpretations is cast into doubt.

Indeed, the relevant texts as they appear in Grapow's translation lend little support to the views on hysteria outlined by Ebbell, Sigerist, and Veith. Let us now turn to the papyri.

### The Kahun Papyrus

The nosological chapters of the Kahun Gynaecological Papyrus reveal a tripartite structure consisting of the elements: *Indication*, *Explanation*, *Prescription*. This format does not determine the pattern with the same rigidity that is found in the Edwin Smith surgical papyrus, where the formal sequence *Title/ Examination/Statement on treatability/Treatment* is used for every case; however, there can be no doubt of its fundamental significance. Kahun 4 illustrates the arrangement. We show the text with square brackets [ ] to indicate a gap in the original restored by the translators. The sign ⟨⟩ implies an explanatory text added by the translators.

> *Indication* (symptoms) "Medicine of a woman who [suffers] in her pudenda, vulva, region of the vulva, and between her buttocks:"
> *Explanation* (specific pathology) "Then you should say about that: [it is] a great enlargement ⟨as the result⟩ of a birth."
> *Prescription* "Then you should make against it: new olive oil, one *hin*; pour into [her] vulva, her . . ."

In 12 of the cases recorded in the Kahun Gynaecological Papyrus (1–3, 5–11, 16, 23/24) the uterus figures in the *Explanation* section of the text in the formula. "It is the $x$-phenomenon ⟨as a result⟩ of the uterus". Twice (5, 23/24) the '$x$-phenomenon' is toothache, in cases 1 and 9 physical damage of the papyrus makes the term illegible, and in the rest of the cases the Egyptian word given is of unknown meaning.

The symptoms to which these explanations correspond are located throughout the body:

(1) eyes and neck
(2) uterus
(3) anus, pubis, thighs
(5) teeth and mouth
(6) limbs and eyes
(7) feet and legs
(8) back of the neck, pudendum, ears
(9) vulva, all members
(10) urine
(11) patient is bedridden
(16) all parts of the body
(23/24) teeth.

The means by which the uterus produces the recorded symptoms are never stated, nor is any uterine movement ever indicated in these chapters. Furthermore, the respective *Prescription* sections, which for the most part recommend vapour-baths applied to the vulva, do not mention the uterus at all.

In summary then, the Kahun Papyrus links ailments in a wide variety of bodily locations to the uterus, but never gives the slightest indication why or how this organ is to blame.

### The Ebers Papyrus

Two chapters of the Ebers Papyrus explicitly mention movement of the uterus:

> 789 "Medication to make a woman's uterus return to its position: give pine saw-dust in ⟨beer⟩ sediment; anoint ⟨with this⟩ a brick of *dꜣjw*; make the woman sit on it."
>
> 795 "Another ⟨medication⟩ to make the uterus return to its position: put an ibis of wax onto charcoal; have the smoke that is given off enter the woman's genitals."

Five other chapters (790–794) that begin "Another ⟨medication⟩" are presumably prescriptions for the same condition. The condition here referred to is most likely to be prolapse of the uterus. In these seven chapters no symptom at a distance is ever mentioned.

### Discussion

There seems to be no evidence to justify the claim that the ancient Egyptians believed that the womb wandered, and particularly the claim that it caused globus hystericus. The belief in the animate uterus is untenable when confronted with the primary texts.

The notion of luring the womb back with aromatic fumigation is evocative and may be plausible, but it is not enunciated in the actual sources we have examined. Such an explanation would also have to account for such unpleasant items as excrement being applied both above to repel and below to attract. It seems more logical to suppose that Egyptian therapists believed that excrement contained some useful ingredient, and that this medication could be introduced either by perineal application or in a potion. The imaginative suggestion by Veith that dried excrement of a man was a deliberate choice to gratify the uterus can be explained more simply. Excrement may merely make an aroma more pungent. According to the *Talmud*, for example, urine increases the pungency of incense, but it was not used in the Temple out of respect (*Keritot* 6a).

We should note also that the papyri are terse and pragmatic. They describe symptoms briefly, state a cause, and proceed to list the remedies which may be applied. Most importantly for us, when the uterus is blamed for a symptom at a distance, it is never said to be mobile, and when it is said to be out of its place, there is never any symptom at a distance.

Prolapse of the womb must have been long recognised, likewise enlargement of the womb with pregnancy, filling the abdomen. Puerperal fever following a pregnancy would give rise to widespread effects in the body. Changes locally may be attributed to the uterus (vulval changes, back pain). More remote effects on the legs or eyes may be attributed in the first case to the sort of oedema which occurs in dependent limbs in pregnancy, and in the second case to a blood-borne humour. The Egyptians recognised the effects of substances taken by mouth as spreading throughout the body, and the Ebers Papyrus describes a detailed system of blood vessels. Perimenstrual and periodic effects might also all be recognised without invoking a wandering womb migrating so far as to cause globus hystericus. In addition, changes with puberty and with the menopause may be observed empirically. Thus, Egyptian doctors had a basis in observation to recognise effects at a distance. Any interpretations given in the papyri are naturalistic, and do not involve a wandering womb.

### Conclusions

We conclude that there is no warrant for the fanciful view that the ancient Egyptians believed that a variety of bodily complaints were due to an animate, wandering womb. In so far as we can appraise their medical opinions about the uterus, their views seem to be based on direct observation without elaborate speculation. All the information available so far shows that whatever views about hysteria may have been held in the Greek world, the wandering womb did not come from Egypt.

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# Health Education and the AIDS Epidemic

LEON EISENBERG

What is known about the biology of AIDS is reviewed, and the social factors which influence disease transmission and public attitudes are considered. After an evaluation of the methods available to control the epidemic, the reasons for the limited success of public health measures thus far undertaken are considered. The ethical debate on public health policy is analysed, and the need for a nationwide educational programme on AIDS is emphasised – one which is responsive to the rights and obligations of citizens in a democratic society.

To meet ethical standards, education about the acquired immune deficiency syndrome (AIDS) should

(a) provide an accurate account of what is and is not known about the disease
(b) do so in language understandable to its intended audience
(c) offer guidelines which, if acted upon, will bring health benefits to individuals, families and communities
(d) be so constructed as to promote the common good at the least cost to individual freedom.

## The public health problem posed by AIDS

As of July 1988, more than 100 000 cases of AIDS had been reported to the World Health Organization (WHO) from 138 countries; because under-reporting is extensive, WHO estimates the actual cumulative total at about 250 000 cases. By extrapolation from fragmentary data on the population seroprevalence of antibodies to the human immunodeficiency virus (HIV), the number of infected persons has been estimated at between five and ten million. Even at the lower estimate, about one million additional cases of AIDS can be expected to rise during the next five years from among those *already* infected by the virus (Mann & Chin, 1988).

Geographically, there are three distinct patterns of HIV infection. In pattern I (predominant in North America, Western Europe, Australia, New Zealand, and urban areas of Latin America), sexual transmission occurs mainly among homosexual and bisexual men; transmission through blood results mainly from intravenous drug abuse. In pattern II (found in sub-Saharan Africa and the Caribbean), sexual transmission is predominantly heterosexual; transmission through blood transfusions continues because programmes to screen blood are not yet in place. Perinatal transmission to the newborn is a major problem; in some urban areas, 5–15% of pregnant women are infected by HIV. Pattern III (found in North Africa, the Middle East, Eastern Europe, Asia, and the Pacific) is characterised by relatively low rates of infection, primarily through exposure to imported blood and blood products, or through sexual contact with travellers from pattern I and II areas.

Currently, neither a vaccine for the prevention of the disease nor a drug to cure it is available, nor is either foreseeable in the near term (Institute of Medicine, 1988*a*). Available treatments are palliative. Hope of intercepting the epidemic rests upon the development of effective health education to change the behaviour which leads to disease transmission. Given the differences in prevalence and predominant modes of transmission, the focus of health education will necessarily vary from country to country.

## The biology of HIV infection

AIDS was first recognised in 1981 because of the temporal conjunction of two unusual disease clusters in young men. The first was made up of cases of pneumonia caused by *Pneumocystis carinii* (Centers for Disease Control, 1981*a*), a fungus (Edman *et al*, 1988) which is pathogenic only in individuals debilitated by another disease; the second consisted of Kaposi's sarcoma (Centers for Disease Control, 1981*b*), a rare skin cancer previously seen almost exclusively in elderly men (Ross *et al*, 1975). The common feature of these two very different diseases is that 'opportunistic' infections (those which occur only in an immunologically compromised host) and secondary cancers had both been observed in patients receiving treatment with immunosuppressive drugs (Walzer *et al*, 1974). What was new was their

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occurrence in otherwise healthy young men without an ascertainable cause for suppression of the immune system. Cases fitting the epidemiological definition of AIDS were next discovered among intravenous drug addicts, and recipients of blood transfusions or blood products.

It soon became evident that an epidemic was underway. Whereas the number of AIDS cases reported in the United States did not reach 800 until the end of 1982, it had risen to more than 7200 by the end of 1984, and had more than doubled again by the end of 1985. As of 9 January 1989, the cumulative US total had risen to 83 231; the fatality rate among patients diagnosed in the first three years of the epidemic and followed to the present exceeds 90% (Centers for Disease Control, 1989). AIDS is occurring at disproportionately high rates among minority and poor populations (Friedman *et al*, 1987).

Contact tracing in the gay community, and from transfusion recipients to donors, implicated transmission of a hitherto unknown infectious particle through semen and blood (Allen & Curran, 1988). By 1983, Montagnier's group at the Pasteur Institute in Paris (Barre-Sinoussi *et al*, 1983) had identified, and Gallo's group at the National Institutes of Health in Washington (Gallo *et al*, 1983) had confirmed, a retrovirus, now known as HIV, as the cause of the disease, and had developed antibody tests for the virus which made it possible to detect infection in asymptomatic individuals. Although a few reputable scientists still question HIV as the cause of AIDS (Duesberg, 1988), the vast majority of active investigators regard the evidence for its causal role as clearly established (Blattner *et al*, 1988).

The determinants of the time lag between infection with the virus and the appearance of clinical disease, and of the variability in its clinical manifestations, are still not understood. A minority of HIV-infected persons become immunosuppressed within the first year; about 25% will show overt AIDS and another 25% the AIDS-related complex (ARC) within five years of infection. As follow-up of infected individuals extends beyond five years, new clinical cases continue to arise; the ultimate proportion who will manifest clinical disease is still unknown (Osborn, 1988). The long silent period magnifies the public health problem. Because asymptomatic HIV-infected persons are unaware of their status (and cannot be recognised by partners), unwitting disease transmission persists.

Although promising leads are under investigation, a fully effective treatment for AIDS or ARC continues to be elusive. In a randomised controlled clinical trial in 1987, zidovudine (azidothymidine, AZT) was shown to produce clinical benefit in patients during a 24-week treatment period; dose reduction or discontinuation was necessitated because of bone marrow toxicity in a number of patients (Fischl *et al*, 1987). As clinical research has continued, zidovudine's initial benefits appear not to be sustainable. Dournon *et al* (1988) have reported, in a consecutive series of 365 treated patients, that most clinical and laboratory indices had reverted to their initial values by six months. Recombinant interferon-alpha has shown promising results in AIDS-related Kaposi's sarcoma, with a major beneficial response in 12 of 26 patients in one trial (DeWit *et al*, 1988), and 8 of 21 in a second (Lane *et al*, 1988). Phase I studies of combined therapy with zidovudine and interferon-alpha are currently underway, as are trials with other putative therapeutic agents.

Developing a vaccine against HIV infection has proved to be a difficult task because of the characteristics of the virus and the nature of the host response. To begin with, there is extensive genetic variation among virus isolates; indeed, the virus continues to mutate within the human host, so that multiple new variants appear during the course of infection (Marx, 1988). This extraordinary mutability (at a rate estimated to be a million times that of eukaryotic DNA genomes) may arise from high error rates in the replication of the retroviral genome, because of the low fidelity of HIV encoded reverse transcriptase (Preston *et al*, 1988; Roberts *et al*, 1988). Second, the virus integrates its genetic code into the genome of cells in the human host once infection occurs; thus, infection is life long. Third, although infection results in antibody production, anti-HIV antibodies are relatively ineffective in neutralising the virus. Fourth, there is still no satisfactory animal laboratory model for AIDS (Koff & Hoth, 1988).

Even after promising vaccines have been fabricated in the laboratory, and have been shown to be immunogenic and non-toxic in human volunteers, there are formidable obstacles in the way of controlled epidemiological trials. Because of the long latent period between infection and the appearance of clinical disease, trials will require not less than three to five years to determine whether the vaccine confers effective protection. Recipients of a trial vaccine, once they seroconvert, will need special means of identification to protect them from being mislabelled as infected. To the extent that AIDS education – obviously a public health priority and an ethical obligation to the volunteer participants – succeeds in reducing high-risk behaviour in both the experimental and the 'placebo' vaccine subjects, it will diminish the likelihood of demonstrating vaccine potency, even if it is present.

## The social dimensions of HIV infection

Because AIDS was first recognised in the US among male homosexuals and, shortly thereafter, among intravenous drug abusers, political conservatives as well as fundamentalist religious leaders interpreted the disease as the physical embodiment of the sufferer's moral defilement. They did not disguise their grim satisfaction at what they considered to be the wages of sin (Eisenberg, 1986), just as, earlier in the century, syphilis had been regarded as a moral problem rather than as a disease warranting a public health response (Brandt, 1988). Yet vulnerability to AIDS does not result from homosexuality *per se*, but from unprotected intercourse with an infected partner. Nor does AIDS result from drug abuse as such. High rates of infection among intravenous drug users stem not from drugs, but from sharing contaminated drug equipment.

Public panic was joined with moral opprobrium when the disease spread to 'innocent victims': recipients of blood transfusions (Curran *et al*, 1984), haemophiliacs dependent on donor-derived factor VIII (Evatt *et al*, 1984), female sexual partners of infected men (Harris *et al*, 1983), babies born to infected mothers (Scott *et al*, 1985), women impregnated by artificial insemination (Stenart *et al*, 1985), and health-care workers accidentally punctured by needles (Centers for Disease Control, 1988*a*). The reassurance the general public had taken from the apparently low rate of heterosexual transmission eroded with the recognition of an almost 1:1 sex ratio in sub-Saharan Africa. Public demand for action grew. Government authorities were forced to face issues they had been trying to avoid because of their inability to satisfy the claims of all constituencies.

Co-operation between nations was impeded by a dispute about the origins of the disease. African seroprevalence data and the discovery of a simian immune deficiency virus (SIV) endemic among green monkeys led to speculation that SIV was the viral precursor for HIV. Recently reported nucleotide sequence data on SIV (Mulder, 1988) and HIV variants (Smith *et al*, 1988) make SIV an unlikely source for HIV. However, the damage had been done. The hypothesis of an African origin of AIDS was bitterly resented by Africans, who took this as yet another example of 'colonial mentality'. The dispute contributed to a delay in acknowledging the extent of the public health problem in Africa.

Although the reasons for the epidemiological differences between pattern I and pattern II countries are not entirely clear, they are likely to have arisen from accidents of history and culturally determined differences in behaviour. In the US, HIV infection apparently began first among a subset of the homosexual male community (Curran *et al*, 1988). Rapid spread was the tragic but inevitable result of patterns of sexual behaviour which had become prevalent in the 'fast lane' of the gay community in the '60s and '70s: sexual congress with multiple and constantly changing partners in gay establishments (bars, bath houses, and the back rooms of cinemas). It is likely that vulnerability to HIV was enhanced by the high prevalence of other sexually transmitted diseases (STDs) in this subpopulation. Homosexual intravenous drug users unwittingly introduced HIV to the addict population. There it spread very rapidly among users sharing equipment in 'shooting galleries' (underground establishments renting space and equipment to use in shooting up, and sometimes providing 'street doctors' expert in needling collapsed veins). AIDS in women, who account for less than one case in ten in the US, results primarily from drug abuse and/or sexual intercourse with bisexual men or male addicts.

In Africa, in contrast, transmission through homosexual intercourse and intravenous drug use is far less common. There, spread has been fostered by multiple heterosexual partners, a high prevalence of other STDs (Piot *et al*, 1988), widespread female prostitution in urban centres consequent upon massive rural migration, and the transfusion of infected blood, all leading to the nearly 1:1 sex ratio (Simonsen *et al*, 1988).

## Interrupting HIV transmission

The facts thus far established about how HIV is, and is not, transmitted from one person to another provide the scientific foundation for control measures. The three principal modes of transmission are (a) by sexual intercourse with an infected partner; (b) by infected blood and blood products; and (c) by placental passage from infected mother to fetus. HIV is *not* transmitted through casual or even intimate non-sexual interpersonal contacts within families, in the workplace, or at school (Friedland & Klein, 1987). Whether it can be transmitted by orogenital contact, by deep kissing, or breast feeding is not known.

Changes in the preparation of factor VIII and other blood products have made those products entirely safe for use. Antibody screening of donated blood has markedly, although not entirely, reduced the risk of HIV transmission by transfusion wherever screening has been introduced; risk persists, however, because of the 30–90-day time 'window' between the onset of HIV infection and the production of antibodies detectable by current screening measures (Ward *et al*, 1988). Systematic screening of semen donors (freezing the semen until repeat HIV antibody testing on donors initially and after six months has established its safety) has minimised the risk associated with artificial insemination. Precautions have limited, although not abolished, the relatively low risk for health-care workers (Centers for Disease Control, 1988*a*). There are, however, no fully effective technological remedies for the two most common modes of HIV transmission, sexual intercourse (homosexual or heterosexual) and intravenous drug use, and none at all for perinatal transmission, other than aborting the foetus because of a 40–50% risk of infection.

Although the use of latex condoms (which do not allow HIV to pass the physical barrier they interpose between penis and vagina) plus virucidal spermicides (which contain nonoxynol 9) reduces risk (Feldblum & Fortney, 1988), condoms are not fail-safe, as is evident from their imperfect record as contraceptives; they may be defective in manufacture, they may be torn or slip off during use, and they must be properly applied before each episode of intercourse. Some men are reluctant to use condoms on the grounds that they diminish pleasure in the sexual act, and others because they are contraceptives; in many countries, condoms are not readily accessible.

With intravenous drug use, the danger inheres in the use of shared paraphernalia (needles and syringes). The virus is transmitted by means of the residual blood in the apparatus when it is passed from one individual to another. The interruption of intravenous drug use (the obviously preferable public health solution – were it possible) or the use of sterile needles and syringes will abolish this mode of transmission. Alternatively, because HIV is a relatively fragile virus, the proper use of a diluted solution of household bleach to clean equipment between use can reduce the likelihood of transmission.

### The level of public knowledge

In view of the extensive media coverage given to the AIDS epidemic in industrialised (pattern I) countries, is there a need for additional health information? Sequential public opinion polls since 1983 reveal growing awareness of AIDS, the risk it poses to health, and some of the facts about infectivity; they also demonstrate that misinformation persists (Fink, 1987). The National Health Interview Survey (Dawson *et al*, 1988) interviewed a probability sample of the US civilian non-institutionalised population at regular intervals. A survey of some 3100 persons on knowledge and attitudes about AIDS in September 1987 revealed that almost all had heard of AIDS; 98% knew it to be fatal, 95% believed that it could be transmitted by sexual intercourse, 76% that it was caused by a virus, 68% that it could be transmitted by transfusion. However, substantial numbers were grossly misinformed. A third or more of the respondents thought it was definitely or probably true that AIDS could be contracted by sharing eating utensils, eating in a restaurant where the cook had AIDS, being coughed or sneezed upon by a person with AIDS, using public toilets, or being bitten by insects! A quarter considered that the disease could be acquired by *donating* blood and a sixth by working near, shaking hands with, or going to school with a person with AIDS. Whereas 82% knew condoms could prevent transmission, 13% believed diaphragms to be effective as well.

Anonymous questionnaires distributed to some 600 students at an eastern US university (Landefeld *et al*, 1988) showed them to be more knowledgeable than the general public; nonetheless, an eighth of the students were concerned about 'catching' AIDS in public toilets, a quarter believed that infected persons should not be allowed to live in dormitories, and an eighth that they should not be allowed to attend classes. Less than 20% of the students who reported having multiple sexual partners, whether homosexual or heterosexual, had changed their sexual behaviour because of the danger of HIV infection. In a current San Francisco study (Bass, 1988) of 500 sexually active teenagers, only 2% of the boys and 8% of the girls used condoms consistently; no less disturbing was the finding that 30% engaged in unprotected anal intercourse, the sexual behaviour most closely associated with HIV transmission in the US.

A public opinion survey of social perception of AIDS in France (Moatti *et al*, 1988) revealed that 37% continue to believe AIDS can be transmitted by blood donation, and 10% by mosquito bites, by drinking from a patient's glass, or in public lavatories. Those who were the least informed were the most likely to favour mandatory screening for HIV infection and isolation of AIDS patients (as was true in the US university study).

The situation is somewhat different but still far from satisfactory among the two populations in Western countries at greatest risk: sexually active homosexuals and intravenous drug addicts. Among selected (that is, middle-class, highly educated, and self-declared) US gay populations, knowledge of AIDS is greater, and reported reduction in high-risk behaviour is more extensive (Winkelstein *et al*, 1987; Martin, 1987). In parallel, there has been a decline in rates of HIV seroconversion and in the prevalence of other STDs among such groups. These changes likely reflect the enormous emotional and social impact AIDS has had on the organised gay community (Fitzgerald, 1986*a*,*b*). Nonetheless, a significant proportion continue to engage in behaviour they report they know place them at high risk for infection. Moreover, the recently reported increase in rates for syphilis in the US (Centers for Disease Control, 1988*b*), primarily among Blacks and Hispanics, reflects (a) the failure of current efforts to reach minority populations, and (b) the diversion of resources from other STD control programmes to support AIDS control efforts. Among intravenous drug addicts, sharing equipment is widely known to be dangerous; an illegal market in allegedly sterile needles has grown in New York City; yet sharing continues to be the modal behaviour pattern (Friedman *et al*, 1987).

Thus, there is an urgent need, not only for more, but for more effective, health education.

## Barriers to AIDS education

AIDS education faces formidable obstacles. Stating information clearly and disseminating it widely in language understandable to target populations are necessary, but not sufficient. Individuals at risk must be motivated to change their actions, and must have the skills to do so; to maintain safer behaviour, continuous social reinforcement is necessary. When the established behaviour involves sexual practices and drug use, change is predictably difficult to effect (Fineberg, 1988). For almost two decades, unprotected sexual intercourse has been the norm among US teenagers, evident in the fact that the US has the highest teenage pregnancy rates, although it does not have the highest rates of pre-marital intercourse, among industrialised nations (Jones *et al*, 1985). As to intravenous drug use, not only is needle sharing part of its subculture, but addicts made desperate by withdrawal will use whatever equipment they can find. Long-term disease prevention from either mode of transmission demands a sustained change in behaviour (in contrast to the one-time decision to be vaccinated without having to change the rest of one's behavioural repertoire).

In face of the powerful social and cultural forces which maintain high-risk behaviour, the US federal commitment to AIDS education can only be called paltry. The Institute of Medicine/National Academy of Sciences (1986) called for annual expenditures of a billion dollars for AIDS education and related public health measures by 1990. The allocation did not reach $315 million until 1988; the budget proposed by the administration for 1989 is only $400 million. The Presidential Commission on the Human Immunodeficiency Virus Epidemic (1988), notwithstanding its appointment by the incumbent administration, severely criticised the inadequacy of the federal effort, and called for a far more ambitious undertaking.

The effectiveness of education has been further compromised by reluctance to use explicit terminology. In the first years of the epidemic, US media employed the term 'bodily fluids' as a euphemism for semen or blood. The ambiguous language added to public panic because it was interpreted to include saliva, sweat, and tears. Even the instructions inserted in commercial condom packages require the reading level of a high-school graduate for full comprehension, making the instructions virtually useless for those in most need of them (Richwald *et al*, 1988).

## Ethical issues *vis-à-vis* risk reduction

The US effort to control HIV infection has been bedevilled by strongly held differences about what is and is not morally acceptable in public policy. Although the US is a democracy with a constitutionally prescribed separation between church and state, the cultural and ethnic heterogeneity of the US population has resulted in divergent religious and secular viewpoints. Fashioning coherent public policy out of the claims of competing constituencies represents an as yet unsolved political challenge.

The public debate can be most clearly epitomised by contrasting two opposing camps: public health advocates versus moralisers. The former adopt a pragmatic, consequentialist position, one that can be termed 'ethical realism'; the latter base themselves on religious fundamentalism, and claim they are 'the moral majority' in the US. Their morality has been challenged; public opinion polls have demonstrated that they are far from the majority. It is true that some physicians adopt a moralising stance, and some religious leaders accept the urgency of pragmatic measures at the same time that they advocate moral persuasion. Yet this antithesis conveys the essence of the controversy. Each position reflects implicit as well as explicit social values about sexuality, medicine, and disease.

The public health position finds no moral meaning in disease phenomenology. Its goal is the reduction of morbidity and mortality to the minimum achievable by existing means. Advocates specify their goals in operational terms, and rest their case on empirical evaluation. The question they ask is: does a given measure in fact reduce disease transmission? Their position was eloquently stated by Thomas Sydenham in 1673 (see Temkin, 1949), when he defended his studies of venereal disease treatment against the charge that they contributed to immorality by removing "the fear of future trouble" which "terrifies the unchaste":

> "If we reject all cases of affliction which the improvidence of human beings has brought upon themselves, there will be but little room left for the exercise of mutual love and charity. God alone punishes. We, as best we can, must relieve. . . . Hence I will state what I have observed and tried in the disease in question; and that not with the view of making men's minds more immoral, but for the sake of making their bodies sounder. This is the business of the physician."

For the moralisers, the prevention of disease, although desirable in itself, is secondary in value to more fundamental moral precepts about the good life. In the eyes of many fundamentalists, disease itself plays a role in the moral order of the world. Behaviourally transmitted diseases serve a moral function, insofar as fear of contracting them encourages continence. To remove that fear by medical means is to encourage immorality. Thus, Norman Podhoretz (see Dershowitz, 1986), spokesman for the New Right, condemned political leaders who called for a crash programme to develop an AIDS vaccine: "Are they aware," he asked, "that in the name of compassion they are giving social sanction to what can only be described as brutish degradation?"

Earlier in this century, when syphilis was epidemic, the social hygiene movement had insisted that the best way to prevent infection was by adherence to an ethic that restricted sexual relationships to marriage, a goal that was to be achieved through education to encourage abstinence and the repression of prostitution (Brandt, 1988). Measures to prevent syphilis or to treat it, by making sex safer, could only encourage promiscuity. Indeed, a leading American dermatologist (Stokes, 1950), after the remarkable success of penicillin in treating syphilis, felt impelled to write:

> "It is a reasonable question, whether by eliminating disease, without commensurate attention to the development of human idealism, self control, and responsibility in sexual life, we are not bringing mankind to its fall instead of its fulfillment."

These contrasting views have been widely voiced in the years since the magnitude of the AIDS epidemic became apparent. They lead to sharply different conclusions about disease containment.

The position of the religious right on homosexuality is based on biblical injunctions interpreted as condemning such behaviour. Whatever his desires and however they arise, the homosexual is deemed capable of the moral choice to renounce his impulses. If he opts for celibacy, he can be forgiven; if he continues on his path, he has rejected salvation. To instruct a sinner on how to maintain his health while continuing to sin is to foster immoral behaviour. To educate children about homosexuality except to condemn it is to place temptation in their way. The only moral way, they contend, indeed, the most effective way, to limit the spread of disease among homosexuals is by demanding that they abandon their 'style of life'. Because, in this view, homosexual behaviour is a wilful choice, AIDS becomes a self-inflicted disease.

The consequentialist position places health outcomes first. Whether the genesis of homosexuality is taken to be biologically determined, socially shaped, or freely chosen is irrelevant; the central facts are its concurrence and the health risks associated with it. The public health goal is education about risk reduction. To do so effectively requires that homosexuals be treated with respect as fellow human beings. The self-proclaimed moralist's fear that telling adolescents the facts about homosexuality will seduce them is a fear without data to support it. Providing all citizens with the facts about disease transmission in order to enable them to modify their behaviour accordingly is the fundamental ethos of the realist.

The moraliser believes that pre-marital and extra-marital sex are sins to be condemned. Although the preservation of life is a *desideratum*, it is secondary in importance to living a moral life. Adherence to morality, so defined, will in itself obviate sexually transmitted diseases. Sex education is the primary responsibility of family and church. If it is to be permitted in schools, moral context must take precedence over physiology. Those who believe that intercourse is licit only when it permits procreation regard instruction about condoms as unacceptable; condoms are contraceptives, even if they are ostensibly used for disease prevention.

The consequentialist position on sexuality begins with the recognition that pre-marital experimentation is widespread in contemporary society. Whether it be taken to be a component of normal sexual development or a deviation from mature sexuality, it will not be changed by exhortation. Because ignorance about sex not only fails to delay sexual expression but transmutes it into a high-risk activity, public health advocates focus on what is feasible; namely, the provision of full information about how disease transmission can be minimised, and ready access to condoms to increase their use when intercourse does occur.

Ethical realists no less than moralisers view intravenous drug abuse as inherently self-destructive. Where the two differ is in the stance they take on how it can be controlled, and on measures to limit the disease transmission associated with it. Whereas the medical viewpoint is compatible with a variety of control measures extending from strict legal interdiction through methadone maintenance to drug-free treatment programmes (to the extent that their effectiveness is supported by empirical evidence), the moraliser accepts only strict interdiction, and rejects methadone maintenance as substituting addiction to one drug for another. There is a further contrast. Those who focus on health outcomes point to the obvious failure of law enforcement to control the drug trade, the unwillingness of many addicts to accept treatment, and the high recidivism rate among those addicts who do enter treatment programmes. In view of these demonstrable facts, although consequentialists support augmented treatment efforts, they simultaneously advocate educating addicts about health risks and making sterile injection equipment available in order to minimise disease transmission. To the religious moraliser, making drug use safer is to condone it, and thus to contribute to its prevalence. No less dismayed by the spread of AIDS, particularly when it is transmitted to unknowing spouses and to offspring, they insist that stricter law enforcement and stronger penalties are the appropriate public response.

Pre-marital sexual continence, sexual fidelity in marriage and cessation of intravenous drug abuse, the propositions put forth by the moralisers, would indeed halt HIV transmission. Because none of these goals has even the most remote chance of being attained, public health advocates promote pragmatic policies, admittedly partial and imperfect, to control disease. They cite the modest but persuasive evidence for effectiveness. That evidence is dismissed by the religious right as irrelevant to what matters most: public morality. The result of the controversy has been to require compromise in, but not to halt, educational campaigns.

## Science, human rights, and AIDS policy

To attain the goal of interrupting disease transmission, AIDS education must increase public understanding of the technical questions and the human rights issues which underlie public policy. This is a formidable challenge. Public education about the scientific method is lamentably inadequate; scepticism about science and scientists is widespread (Eisenberg, 1986). Few understand that 'safety' can never be absolute and that 'risk' is always relative. Research on the factors influencing choice in the face of uncertainty has shown that the way the alternatives are presented can influence subjective assessment even when the two presentations are mathematically equivalent (Tversky & Kahneman, 1981).

In the debate about mandatory screening for HIV infection, the dispute is between those who assert a public 'right to know' and who claim that mandatory testing is necessary to prevent 'ignorant transmission' of the virus, and those who give greater weight to individual rights and assert on pragmatic grounds that voluntary testing is far more likely to succeed.

Advocates of mandatory testing allege that it would benefit the community at large by providing accurate epidemiological data, and by opening avenues (including quarantine) to control the behaviour of infected persons. The victims themselves, they contend, would benefit from the counselling that would be provided, and by being informed of (or even required by law to accept) such treatment measures as are available at a given time. Advocates differ as to how far they would carry mandatory HIV testing. Some insist it be universal, others would make it a condition for marriage licensure and hospital admission, and still others would limit its application to persons known to be engaging in high-risk behaviour.

Opponents dispute these claims on both civil libertarian and pragmatic grounds. To begin with, compulsory testing violates the right of privacy. Because of the social stigma associated with HIV infection, persons identified as seropositive will be exposed to the risk of losing jobs, being evicted from rented accommodation, being barred from school, being denied health and life insurance, and being rejected by family and friends, events that continue to be everyday occurrences. Confidentiality of medical information is easier to promise than to guarantee. Although opponents of mandatory testing acknowledge the importance of better epidemiological data, they contend that such information can be gathered by anonymous testing in hospitals, clinics, and volunteer test sites. The failure to make assurance of confidentiality credible by additional legal protection currently impairs voluntary test programmes (Presidential Commission on the Human Immunodeficiency Virus Epidemic, 1988).

In a recent study in Oregon (Fehrs *et al*, 1988) which compared an anonymous test site with one that required names but promised confidentiality, usage doubled at the anonymous site; many more infected persons obtained counselling. The Japanese Ministry of Health and Welfare has proposed an AIDS Prevention Bill to make reporting HIV carriers to prefectural authorities mandatory. To examine the effects of official notification on willingness to be tested, Ohi *et al* (1988) queried large groups of Japanese workers, students, male homosexuals, and female prostitutes on their willingness to accept testing under such a circumstance. Their findings indicate a sizeable decline in compliance, were the bill to become law, especially among the at-risk groups (homosexuals and prostitutes). They conclude that "the effect of the bill might be the opposite of what is intended".

Mandatory HIV testing as a requirement for employment in occupations where public safety is at stake (e.g. in mass transportation) has been proposed in several countries. Although screening is rationalised as preventing the potential danger posed by an impaired airline pilot or air-traffic controller, it is also clear that industry has a major financial stake in screening new workers at risk for illness or premature death, in order to avoid low returns on the investment in job training and higher insurance costs. These facts do not in themselves gainsay the importance of examining implications for public safety, but do suggest caution in accepting such claims at face value. What is the evidence?

Autopsy data have revealed that extensive infection of the central nervous system is frequent in advanced stages of AIDS; such patients exhibit severe cognitive and emotional neuropsychiatric disorders termed the AIDS dementia complex (ADC) (Navia *et al*, 1986). ADC can appear well before the terminal stages of AIDS (Navia and Price, 1987), but is rare in the absence of other clinical signs and symptoms (Price *et al*, 1988). In a carefully controlled study of cognitive function in a cohort of gay volunteers evaluated before and after their HIV serostatus was determined, Kessler *et al* (1988) found no significant differences between seropositive and seronegative subjects *before* they knew their status. However, psychometric test performance of seropositive individuals declined significantly *after* they had been informed; that is, observed post-test deterioration in HIV positive individuals resulted from psychosocial stress rather than HIV infection *per se*.

Although negative findings even in a relatively large cohort cannot completely exclude the possibility of rare instances of cognitive impairment in seropositive but otherwise clinically well individuals, this risk must be assessed in relation to other far more common hazards; for example, impairment resulting from alcohol or illicit drugs (Rose *et al*, 1978), minor tranquillisers (Skegg *et al*, 1979), disruption of circadian rhythm caused by journeys across multiple time zones (Graeber, 1986), and other diseases (Institute of Medicine, 1981; Torsvall & Akerstedt, 1987).

Protecting public safety in mass transport is best assured by efforts to develop more sensitive methods for early detection of significant deterioration of function, whatever its cause (Doege, 1979; Green, 1983). Thus, the WHO Global Programme on AIDS Consultation on the Neuropsychiatric Aspects of HIV Infection (1988) concluded that there is *at present* "no evidence for an increase of clinically significant neuropsychiatric abnormalities" in *otherwise asymptomatic* HIV seropositive persons and "no justification for . . . screening as a strategy".

Mandatory testing involves disproportionate costs for meagre results. The predictive value of a positive finding on a screening test depends not only on the accuracy of the method but also on the prevalence of the disease in the population being tested. The nature of the problem can be illustrated by the following two examples. Although they are 'thought experiments', they are based on realistic field conditions. In the first, screening is applied to a population with low seroprevalence, in the second, to one with a very high rate.

Consider the results when a screening test, the enzyme immunoassay (EIA), is applied to 100 000 persons with a true seroprevalence of 0.5% (approximately that estimated for the US population as a whole). When performed under optimal conditions, the EIA is remarkably accurate. It has a sensitivity (the proportion of infected persons who test positive) of about 98%, and a specificity (the proportion of *un*infected persons who test negative) of somewhat better than 99%. Yet, when the EIA for HIV antibodies is applied to this study population, it will generate the findings presented in Table I.

The test will yield 995 false positives (i.e., a positive result in the absence of infection) for the 490 true positives it identified, a true-positive:false-positive ratio of more than 2:1! The predictive power of a positive test would be 33%. Almost 1000 persons

TABLE I

*EIA results in a population of 100 000 with a true seroprevalence rate of 0.5%*

| | *HIV infection* | *No HIV infection* | *Total* |
|---|---|---|---|
| EIA positive | 490 | 995 | 1485 |
| EIA negative | 10 | 98 505 | 98 515 |
| Total | 500 | 99 500 | 100 000 |

TABLE II

*Western blot confirmation of infection in a population of 100 000 with a true seroprevalence rate of 0.5%*

| | *HIV infection* | *No HIV infection* | *Total* |
|---|---|---|---|
| WB positive | 451 | 50 | 501 |
| WB negative | 39 | 945 | 984 |
| Not tested | 10 | 98 505 | 98 515 |
| Total | 500 | 99 900 | 100 000 |

(1%) of the population tested) would be exposed to the devastating consequences of being told they are infected by HIV, when in fact they are not. Clearly, it would be imperative to carry out confirmatory tests by the closest there is to a gold standard, the Western blot (WB). On pre-screened sera, the WB has a sensitivity of 92% and a specificity of 95%. If it were applied to EIA test-positive sera (the negatives, including ten false negatives, not being subject to retest), the findings would be those in Table II. The final result is now 451 true positives detected, 49 missed, and 50 false positives still misidentified.

If the EIA were to be applied to a population of 100 000 with a true seroprevalence of 50% (a rate approximating that among sexually active San Francisco gays and intravenous drug addict subpopulations in Newark and New York City), the reliability of positive test findings would change dramatically. This situation is illustrated in Table III. Testing would yield one false positive for each 98 true positives. The predictive power of a positive test would be 99%. There would, of course, still be the necessity for WB confirmatory testing (Table IV). The net result would be 45 080 true positives identified at the cost of 3920 missed (7.8%), but only 25 persons out of the original population (0.025%) falsely labelled as infected. Despite the quite extraordinary accuracy of these tests (far beyond that of most tests in common use), both false-negative and false-positive results are inescapable – with all the human costs they entail.

TABLE III

*EIA results in a population of 100 000 with a true seroprevalence rate of 50%*

| | *HIV infection* | *No HIV infection* | *Total* |
|---|---|---|---|
| EIA positive | 49 000 | 500 | 49 500 |
| EIA negative | 1000 | 49 500 | 50 500 |
| Total | 50 000 | 50 000 | 100 000 |

TABLE IV

*Western blot confirmation of infection in a population of 100 000 with a true seroprevalence rate of 50%*

| | *HIV infection* | *No HIV infection* | *Total* |
|---|---|---|---|
| WB positive | 45 080 | 25 | 45 105 |
| WB negative | 3920 | 475 | 4395 |
| Not tested | 1000 | 49 500 | 50 500 |
| Total | 50 000 | 50 500 | 100 000 |

Cleary *et al* (1987) undertook a careful quantitative analysis of the findings to be expected if mandatory pre-marital screening were to be enforced in the US. Their calculations were more precise than those exemplified in the preceding tables, because they took into account known variations in seropositivity by gender and age, and more precise figures for EIA and WB sensitivity and specificity. Pre-marital screening would detect fewer than 0.1% of those tested as HIV infected, would mislabel more than 450 (100 as false negative and 350 as false positive), and would entail the expenditure of well over $100 million. If mandatory testing were to be instituted nationwide, the fiscal costs and negative social consequences would be more than 100-fold greater. The funds expended would yield far greater benefits if applied to public education and voluntary testing. Experience in one state (Illinois) with a mandatory testing programme has led even its proponents to consider repeal of the legislation: state marriage rates dropped (many couples went to neighbouring states to escape the requirement), test facilities were swamped, and very few new cases were uncovered (Wilkerson, 1988; Associated Press, 1988). Among the first 45 000 persons tested, five were positive; the cost for each identified case of HIV infection (Byrne, 1988) was about $715 000!

The WHO Global Programme on AIDS convened a meeting of international experts to consider criteria for HIV screening programmes in May 1987 (World Health Organization, 1987). The participants concluded that:

> "readily accessible counselling and testing for antibody to HIV, provided on a voluntary basis, are more likely to result in behavior changes that contribute to the public health goal of reducing spread of HIV than are mandatory screening initiatives. . . . Epidemiological surveillance data can be obtained, as needed, by methods that do not compromise human rights. The complexity of logistic, technical, personal, social, legal and ethical issues generated by mandatory screening of targeted populations must be recognized."

Data on HIV seroprevalence in the population can be obtained without putting confidentiality at risk, and without depending on voluntary assent by testing blood specimens obtained for routine medical uses after removing identifying personal information. Such studies are most easily done in hospitals or outpatient clinics by screening residual blood in specimens taken for other purposes. From an epidemiological standpoint, the findings will not be representative of a random population sample, since the test sera derive from persons who are seeking medical care. However, for particular purposes, testing anonymous specimens can be fully informative; for example, in blood drawn from pregnant women at term, since virtually all urban births are in hospital. Such data represent accurately the status of the population served by specific hospitals (Landesman *et al*, 1987; Hoff *et al*, 1988).

Although anonymous testing of residual blood specimens does not jeopardise confidentiality, the procedure has been criticised on the grounds that a patient's blood cannot ethically be used for any purpose other than that specified when the patient agreed to have it drawn. This objection has not been persuasive to the US Institutional Review Boards when they have been asked to rule on the matter; the residual blood would otherwise simply be discarded as waste matter; testing provides information of use to the community (and, therefore, to the patient as a member of the community). The method does carry a liability: once personal identifiers have been removed from blood specimens, there is no way to notify seropositive persons of their status.

Even if one agrees that voluntary testing and anonymous sampling are preferable to mandatory screening under present circumstances, would the same judgement be warranted (a) if test error were to be significantly reduced, and (b) if means to eliminate infectivity were to become available at some time in the future? Let us consider each in turn.

Error rates can be, and are being, minimised by more exacting confirmatory Western blot standards (Burke *et al*, 1988). New test methods are under development in research laboratories. They are based upon the use of the polymerase chain reaction to amplify specific segments of the HIV genome (Mullis *et al*, 1986), and permit direct detection of infection independent of antibody response (Loche & Mach, 1988; Laure *et al*, 1988). However, reduction of test error rates alone does not suffice to establish the public health utility of mass screening, as Weiss & Thier (1988) have shown in an editorial pointedly entitled "HIV testing is the answer – what's the question?" In the absence of a cure for AIDS, the purpose of testing is to reduce transmission by changing the behaviour of infected persons. Evidence of behavioural change among individuals who choose to be tested on a voluntary basis cannot be generalised to those who are given information they have not sought.

The New York Blood Bank urges donors not to give blood for transfusion if they have engaged in high-risk behaviour; it provides a confidential form on which potential donors can designate their blood 'for studies only' if they are in a risk category. Nonetheless, such individuals continue to give blood for transfusion (Cleary *et al*, 1988). When notified of their seropositivity and reinterviewed, 90% acknowledged that they fell into a risk class (although only 10% 'believed' they would test positive). Moreover, even after counselling, some infected persons persist in high-risk behaviour (Cleary, pers. comm.). Without more effective means of bringing about behavioural change among those notified of their serostatus, improved precision in screening will not in itself justify mandatory screening.

Suppose, however, that research yields a drug capable of suppressing infection and, more to the point of the present discussion, of abolishing infectivity. Under such a circumstance, identifying infected persons through screening would not only make possible direct benefit to them, but it would also provide the means to halt the spread of infection in the community. Mandatory screening would then appear in a new light. While it seems probable that almost all seropositive persons would seek treatment in view of their almost inevitable progression to severe disease, debate about public policy would soon shift to the question of mandatory treatment for those who refused to accept it voluntarily and thus continued to put others in jeopardy. There are public health precedents for compulsory treatment: in many jurisdictions, individuals with active tuberculosis who refuse care can be confined to sanatoria by court order. Given the far greater lethality of AIDS, one can anticipate that the vast majority of the public would support mandatory screening and mandatory treatment, were such a drug to become available.

The matter will almost certainly not be so simple from a medical standpoint, as the preceding discussion suggests. It is highly unlikely that an agent will be discovered that is both completely effective in suppressing infectivity and altogether without toxicity; thus far, every promising drug has had major side-effects. However persuasive the argument to be constructed for compulsory treatment by a 'fully effective' and 'completely benign' drug, the less certain its therapeutic potential and the greater its toxicity, the more difficult will be the resolution of the trade-off between individual autonomy and the community interest in halting the epidemic.

## What is to be done?

Despite the absence of a vaccine capable of preventing HIV infection or a treatment able to cure it, what is known about its modes of transmission makes control of the HIV epidemic a feasible goal, but only if citizens are effectively informed about what is (and is not) known, and what they can do individually and collectively to promote health among those currently well, and to provide care for those who have already been infected. Citizens need to understand not only what modifications they need to make in their own behaviour as individuals, but must also be thoroughly familiar with the issues at stake in formulating public health policy.

There can be no question of withholding facts (such as the inability to assure complete safety of the blood supply), but scientific presentations and media reports on those presentations should take care to put them in context (e.g. compare the risk of infection from transfusion with the hazard of refusing it when it is medically necessary). The specificity of the information provided and the explicitness of the language used should be tailored to the groups at whom the campaign is targeted. Thus, the details of gay sexual behaviour and 'eroticising' safe sex will be of little relevance for the general population, but crucial in enabling homosexuals to avoid disease. A level of explicitness which may be deemed offensive to the population at large is nevertheless essential for reaching specific groups; it can be provided through channels other than mass media. Gay self-help groups have prepared pamphlets, made video tapes, and organised group discussions for their own constituencies. Detached street workers, often former drug addicts employed by health departments, have been able to contact intravenous drug users who need graphic demonstration on how to sterilise equipment. The credibility of the individuals providing the information is a crucial determinant of whether it will be believed (Chelimsky, 1988).

The success (Winkelstein *et al*, 1987; Martin, 1989) of safe-sex educational programmes produced and sponsored by gay organisations has been nothing short of remarkable: seroconversion rates in annual probability samples of homosexual men in San Francisco have fallen from 18.4% before 1984 to 4.2% in 1986, and to 0.7% (Winkelstein *et al*, 1988) in the second half of 1987! But this has been limited to the primarily middle-class, educated, mostly white men who openly acknowledge a gay self-identification. There is little evidence the message reaches 'closet' gays, members of ethnic minority groups, and bisexuals who do not identify themselves as homosexual. The complexity of the issue is illustrated by Brazilian culture, where the ideology of machismo is prominent. The notion of a gay identity is a recent 'import' from North America, and is applied only to those who are the passive or recipient partners in homosexual pairs (Parker, 1987). Men who are the active or 'masculine' partners (i.e., those who insert the phallus) in homosexual intercourse are by definition not gay, a category which they regard as invidious. Thus, were HIV educational efforts to be directed at 'gays' in Brazil, they would necessarily fail to reach key links in the disease transmission chain.

AIDS education for addicts has hardly begun, and is still not routinely incorporated into drug treatment programmes. There has been a two-and-a-half-fold increase in deaths among intravenous drug users in New York City coincident with the AIDS epidemic, despite no discernible change in the number of users. About a third of the excess deaths have been directly attributed to AIDS. However, Stoneburner *et al* (1988) conclude that AIDS accounts for many more of the excess deaths because autopsy data reveal the presence of infections and other diseases associated with HIV infection. Because such deaths occur disproportionately among black and hispanic intravenous drug users, current data underestimate the impact of AIDS in minority communities. Clearly, such individuals are not being reached by drug treatment programmes and by education about the importance of clean syringes.

The limited success associated with health education for the population at large makes evident the need for experimentation with new approaches. As Warwick *et al* (1988) point out, broadcasting the 'scientific facts' to passive recipients is insufficient to produce change in health-related behaviour. Educational planning must begin by discovering through ethnographic methods what it is particular groups (e.g. teenagers) believe and what worries them, in order to design interactive formats to promote behavioural change. Enthusiasm and good intentions cannot substitute for evidence of effectiveness. The imperative is for a major commitment to evaluation research, thus far sadly lacking.

In late May 1988, at a cost of $17.4 million, 106 million copies of the Surgeon General's brochure *Understanding AIDS* were distributed to all US household, post-office box holders, and all territories, with a Spanish version for Puerto Rico. What, if any, change in knowledge, attitude, or behaviour resulted from this massive and much-applauded effort? The brochure did elicit 250 000 calls to a special telephone hot-line. However, according to a Gallup Poll, 51% of a population sample queried said they had not read the report, either because they had no recollection of its arrival or because they chose not to read it when they saw it (Blendon & Donelan, 1988). A national health interview survey undertaken in May and June 1988 revealed marginal gains in accurate information, and marginal reductions in misinformation about AIDS in June as compared with May after mass distribution of the brochure

(Dawson, 1988). Public funding for educational projects must include a mandatory set-aside for evaluation of outcome (Chelimsky, 1988), lest we continue to invest in ineffective methods.

Although the prevalence of HIV infection among heterosexuals in the US and Western Europe has remained relatively low; the 1:1 sex ratio in Africa gives reason for concern that current rates may increase if preventive measures are not undertaken. Therefore, education about sexuality and STD transmission must be "part of a comprehensive health education plan" in public schools, as stated by the US Committee on School Health of the American Academy of Pediatrics (1988). The Committee recommends that concepts of health and disease, including the role of micro-organisms, and the importance of cleanliness, should be the focus from kindergarten to third grade. From grades 4 to 6, the nature of AIDS and its modes of transmission should be included; myths of insect vectors and casual spread should be dispelled. Because risk behaviour is likely to begin at about grade 7, the Committee calls for an intensive secondary-school curriculum with emphasis on AIDS as an STD, the nature of HIV infection and the immune response, modes of transmission (including intravenous drug use), the prevention and treatment of the disease, and discussion of its social and psychological aspects.

The Academy Committee (1988) cautioned that "candid discussion of all aspects of sexual transmission must occur in an age-appropriate and culturally sensitive fashion". The recommendations, while correct and straightforward in concept, are broad and general; their translation into specific educational content is key to the success of the effort. Care will be required to avoid identifying sex so closely with disease as to impair normal sexual development. The literature on health education provides abundant evidence that presenting the facts is not enough (Becker & Joseph, 1988). Teenagers must be motivated to act, and be equipped with the skills to do so. A promising lead is provided by the success of classroom training programmes designed to augment behavioural skills in resisting the social pressure to conform with peer solicitations to begin smoking (Schinke *et al*, 1985; Best *et al*, 1988).

Given the number of hours most citizens of the US and Western European countries spend watching it, television could become a highly effective way to reach the general population. Thus far, concern about offending the moral sensibility of some viewers has limited television messages to general, non-specific presentations during other than prime-time hours. Television networks, which have few reservations about soap operas which celebrate clandestine sex, demur at showing the ways sex can be made safer (e.g. by displaying the proper way to use a condom). A state-supported television campaign in the Dominican Republic has demonstrated that explicit programming about condom application lends to greater public knowledge and increased use (Foreman, 1988).

As emphasised from the beginning of this review, the problem of HIV infection transcends national boundaries. The epidemiology of AIDS differs between countries; control measures will have to take these differences into account; their effectiveness will depend on their sensitivity to unique features of culture and social matrix; the way ethical issues are resolved will differ by country, but they are everywhere paramount. No country can isolate itself from the danger by instituting mandatory screening at its borders (as some have proposed doing). Effective actions require international co-operation (World Health Organization, 1987). The World Summit of Ministers of Health on Programs for AIDS Prevention, meeting in London in January 1988, declared that:

> "The single most important component of national AIDS programs is information and education because HIV transmission can be prevented through informed and responsible behavior. . . . [Such programs] should take full account of social and cultural patterns, different life styles, and human and spiritual values. . . . We emphasize the need in AIDS prevention programs to protect human rights and human dignity. Discrimination against, and stigmatization of, HIV infected people and people with AIDS and population groups undermine public health and must be avoided." (World Summit of Ministers of Health, 1988)

In similar terms, the 41st World Health Assembly, held in Geneva on 13 May 1988, resolved that member states be urged:

> "To foster a spirit of understanding and compassion . . . and to protect the human rights and dignity of HIV-infected people . . . and to insure the confidentiality of HIV testing and to promote the availability of confidential counselling and other support services." (World Health Assembly, 1988)

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# Counselling the Relatives of the Long-Term Adult Mentally Ill
## I. Evaluation of the Impact on Relatives and Patients

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The efficacy of implementing a clinically feasible psychosocial intervention which addresses the needs of carers of the long-term mentally ill is reported. All the relatives of patients in continuous high contact with one clinical team in a local day-care facility were offered the intervention. An interactive education session at home was followed by a monthly relatives group which aimed to reduce components of expressed emotion and to alleviate burden. Patients and relatives were assessed. The controls were the patients in contact with the other teams in the day-care facility, and their relatives. The intervention was effective at reducing EE and improving family relationships. Offering this kind of support to people who are providing long-term care for the severely mentally ill can contribute significantly to the quality of life of both supporters and patients.

Family atmosphere, and the attitudes of family members towards a mentally ill person are believed to influence that person's ability to remain relatively free of positive symptoms of disorder and to function well outside hospital (Freeman & Simmons, 1963; Vaughn & Leff, 1976*a*). This claim has been strengthened by the success of interventions designed to modify the attitudes and behaviour of family members in caring roles (Leff *et al*, 1982, 1985; Falloon *et al*, 1985; Hogarty *et al*, 1986).

As community-care policies increasingly shift the main day-by-day responsibility for long-term aftercare from the state to spouses, parents, and other available kin, these findings assume particular importance. Nearly 60% of a series of first-onset cases of schizophrenia were living with relatives when they became ill, and most returned home after discharge from hospital (MacMillan *et al*, 1986). About half of first-onset cases are likely to develop a chronic, recurrent or persistently disabling psychotic illness (Bleuler, 1978), and at least one-quarter of patients with affective disorder will have persistent symptoms which are to some extent incapacitating (Bebbington, 1982). It has been estimated that 139 people in 100 000 of the population will need a high level of long-term day care for a psychiatric illness (Wing, 1982). Of this high-dependency group, nearly half continue to live with relatives (Brugha *et al*, 1988). Thus, the number of relatives supporting severely disabled patients in the community is substantial.

When mental illness is long standing and disabling, the requirements of both patients and their relatives will be of a special type. In contrast to acute or intermittent cases, the concept of relapse is less relevant, since in many cases fluctuations in level of disturbance occur against a background of more continuous disability (Falloon, 1983). In such circumstances, the quality of life of patients and supporters is likely to depend less on minimising active psychiatric symptoms than on maintaining levels of functioning and reducing the negative symptoms that are persistent sources of stress and conflict in the family (Creer *et al*, 1982). For patients, the preservation of independence and self-help skills is of key importance if they are to retain a more than nominal role in the community. Supporting relatives appear to be severely burdened but rarely articulate their difficulties (Gibbons *et al*, 1984; Fadden *et al*, 1987). Frequently, they try to preserve barely tenable situations that impose undue stress on themselves or provide disabling environments for the patient. Some families continue to support patients only by making adjustments that can be seen as maladaptive since they arise from undue self-sacrifice or apathetic disengagement. Such families may need encouragement to change this kind of pathological equilibrium or to separate altogether. Appropriate care in the community for this population must therefore include efforts to prevent or reverse a loss of skills in the patient, to alleviate the subjective and objective burden experienced by relatives, and to facilitate individuation and some degree of separation when needed.

Evidence from consumer groups suggests that relatives lack support from, and easy communication with, professional mental health personnel. Although they need information and advice, they also have less specific requirements from their relationships with professionals; for example, for continuity and trust (Hatfield, 1983). However, their attitudes to services can vary from frank antagonism and suspicion to high dependency and demandingness (Birley & Hudson, 1983). Many relatives develop fixed beliefs or ways of coping which superficially seem maladaptive, but are functionally important for them, and have proved difficult to modify (Barrowclough *et al*, 1987). For the long-term severely ill population, a highly structured and intensive training programme for relatives may therefore be neither feasible nor appropriate in many clinical settings.

Interventions with families have been shown to be effective in reducing relapse in recently discharged groups. Some of the recipients had a long history of recurrent illness, and three large trials have successfully improved patients' social performance as well as having reduced active symptoms (Falloon *et al*, 1985; Hogarty *et al*, 1986; Tarrier *et al*, 1988). However, in these trials, specialised teams have been able to offer relatively intensive help for about one year. Generally, samples in each trial have been homogeneous: the families have been supporting a person with a psychotic illness, and at least one of the relatives has been high in expressed emotion (EE). These circumstances do not reflect the reality of a clinical setting, where typically diagnoses are varied or hard to determine, and available staff time is limited. Further, such sampling may prematurely exclude other groups of relatives who could benefit from support (Hogarty, 1985). Implementing this kind of intervention with unselected groups of supporters of the long-term, continuously mentally ill has not been evaluated previously, although the recent findings referred to above suggest both that it may enhance patients' social functioning and that a wider range of relatives should be included than has so far been acknowledged.

The relationship that the parameters of expressed emotion bear to levels of functional disability has not yet been tested thoroughly (Falloon, 1988). However, the measure does provide a reliable way to assess variations in family atmosphere (Kuipers & Bebbington, 1988). Further, some of the attitudes and types of behaviour characteristic of families rated as high-EE seem intuitively likely to be associated with poor levels of functioning in both acute and long-term populations (MacCarthy *et al*, 1986). Measuring expressed emotion therefore seems to be a legitimate means of summarising aspects of the family situation and pin-pointing areas in which professionals working with such relatives might look for change.

We were anxious to avoid facilitating a model of family functioning in which relatives so reduce both their expectations and the amount of contact they have with the patient that the home becomes a markedly unstimulating environment which cannot capitalise on the patient's functional assets. Fears have been expressed that this kind of 'low engagement' model of functioning may characterise some families rated as low-EE (Hogarty, 1985). This style of interaction is likely to be particularly detrimental for the long-term population. Consequently, we attempted to assess other aspects of both the relatives' and patients' behaviour such as coping style and social role performance which seemed relevant to the needs of this population, and in which we anticipated achieving some change as a result of the intervention.

In the study reported here, therefore, we evaluated the effect of implementing a counselling and support group for relatives of patients who were receiving regular day care and who had severe and long-term psychiatric and social disabilities. The design of the intervention took account of the constraints imposed by a typical clinical situation. During the intervention, we aimed to reduce relatives' EE and the amount of time that relatives spent with patients where necessary. However, we also aimed to alleviate the burden on these relatives, improve ways of coping, and reduce the recognised tendency among relatives to blame patients for the symptoms or course of their illness. We speculated that if relatives could be helped to feel more in control of the problems presented and aware of the value of their own coping efforts, at the same time as gaining an accurate appraisal of the difficulties of the task they were confronted with, by learning about problems experienced by others in similar circumstances, this might help to reduce levels of EE. In view of the chronic and persistent difficulties which characterised the patients in this setting, our aspirations for achieving a substantial reduction in the positive symptoms of their illnesses were limited. However, we hoped that enhancing relatives' coping skills and reducing their distress would in turn improve the social functioning of the patients.

## Method

### Subjects

All patients receiving day care from a specialised service designed to meet the varying needs of the long-term mentally ill in the local community were surveyed. The service is organised to offer continuity of care, structured daytime activities, and residential and drop-in facilities. Staff are divided into three care teams, whose approach is very similar. Those day patients were identified who suffered from a non-organic psychiatric disorder attended the centre at least 2½ days a week, and lived with or spent at least one whole day per week with relatives. Those whose relatives also attended the day-care service as patients were excluded from the study. Out of 78 high-contact attenders, 33 met all the study criteria. Relatives of patients in one of the three teams were invited to attend a monthly support group. Out of a potential pool of 13 patients in this group, the relatives of 4 could not be engaged in the intervention, leaving 9 patients with 13 relatives to make up the experimental group. The remaining 20 patients and their relatives in the other two teams served as controls. Of these, 3 patients or their relatives refused to complete the assessment procedure, leaving 17 families in the control group.

Diagnostic classifications obtained from structured clinical interviews showed that the patients were suffering from a range of problems characteristic of those receiving long-term day care. All were currently severely disturbed and had been continuously disabled by their symptoms for at least one year before they were interviewed. The relatives, therefore, were offered this intervention at a time when neither they nor the disturbed family member were experiencing a crisis or major change. Only one patient in the experimental group and two in the control group had never experienced psychotic symptoms. All but two patients (one in each group) were prescribed neuroleptic medication, and four were taking either antidepressants or minor tranquillisers in addition.

TABLE I
*CATEGO classification of patients*

| *Classification* | *Experimental group (n = 9)* | *Control group (n = 17)* |
|---|---|---|
| Schizophrenia | 4 | 11 |
| Asperger | 1 | 1 |
| Manic–depressive | 3 | 3 |
| Psychotic depression | 1 | – |
| Unsure/no diagnosis | – | 1 |

### Assessment

All patients and their relatives underwent an assessment procedure twice. The first assessment was at the beginning of the study. The second assessment took place after the relatives had attended the group for one year; in the case of the control group, it took place approximately nine months after the start of the study.

#### *Assessment of patients*

The patients' clinical status was assessed using the development version of PSE–10, a structured clinical interview which yields detailed data on psychiatric symptoms, including negative symptoms. Three summary scores were obtained: total subjective disturbance, total negative symptoms, and observed behavioural disturbance. Diagnostic classifications (see Table I) were obtained from computer analysis, using the version of the Catego program which has been developed to accompany PSE–10 (Wing *et al*, 1989). These interviews were conducted by two members of the research team (AS and JH), who were blind to the results of all relatives' assessments. Throughout the study period the patients' clinical state was monitored for signs of relapse or exacerbation of symptoms, and changes in medication or attendance patterns were also noted. When indications of deterioration were present, patients were again interviewed with PSE–10 to establish the severity of the deterioration in their clinical state. All patients were re-assessed at the end of the study period.

Relatives' responses to structured checklists provided ratings on three-point scales of the patients' symptoms and behaviour problems (SBP) and their ability to perform normal domestic and self-help functions at home (role-performance). The reliability of these measures had been established previously (Brewin *et al*, 1987). The SBP item scores were added to give an overall indication of level of behavioural disturbance, and four subscores, of neurotic behaviour, slowness and apathy, social skills deficits, and disruptive behaviour, were also computed. A measure of role-performance was derived by dividing each subject's total score by the maximum number of functions they had the opportunity to perform. Relatives were also asked how the patient would fare if he or she had to cope without support at home for a week.

#### *Assessment of relatives*

The relative with whom the patient spent most time, or who took major responsibility for care, was identified as the key informant. This relative was interviewed at home at the beginning and end of the study period, using a form of the Camberwell Family Interview (Vaughn & Leff, 1976*b*) adapted for use with a chronically ill population. These interviews were conducted by one researcher (BM), who was blind to the results of the patients' assessments and was not involved in the running of the group. The interviews lasted 1½–2 hours and were audio-taped and rated for indices of expressed emotion: critical comments, hostility, emotional over-involvement and warmth. Relatives were classified as high-EE if they made six or more critical comments during the interview, or if they were rated as showing hostility or over-involvement greater than 3 on a 0–5 scale (Leff & Vaughn, 1985). The time relatives and patients spent in face-to-face contact was calculated from detailed questioning about usual household routines. In the course of the interview, structured questions were used to assess relatives' perceptions of restrictions on their social life and the emotional strain imposed by their care-taking role, the level of intimacy and reciprocity achieved in their relationship with the patient, and their attributions about the causes and course of the patients' problems. Relatives were also asked to complete a 28-item self-report checklist of coping strategies, described by MacCarthy & Brown (1989). Responses were scored Yes or No. Each relative was given a coping change score by tallying the number of strategies that he or she had either started to use or discontinued by the second assessment.

Where, in the experimental group, there were two parents in the household, the other parent was also interviewed with the full package of assessment measures, and invited to attend the group. Of the nine patients, four had both parents living in the household.

**Education package**

Previous attempts to provide relatives with information have shown that the acquisition of facts alone does little to change relatives' fundamental attitudes or beliefs (Berkowitz *et al*, 1984; Smith & Birchwood, 1987). Relatives appear to be less receptive to different information when the illness is more chronic (Barrowclough *et al*, 1987). However, preliminary education sessions do seem to enhance relatives' ability to co-operate with and benefit from further interventions. We did not expect, therefore, to modify the beliefs of our patients' relatives through an education component. Instead, we aimed to devise an instrument which would be short and easily comprehensible to all participants, which would allow relatives to make their beliefs and attitudes explicit, and which could form a basis for future discussion.

The instrument – the Knowledge Questionnaire – assessed the relative's knowledge of the particular diagnosis, aetiology, course and treatment of the patient's disorder. Equivalent versions of the questionnaire were designed to cover the various diagnoses represented in the group. All relatives in the experimental group were seen on two further occasions before they attended the support group. During the first assessment session they had been asked to complete a Knowledge Questionnaire before the interviewer's next visit. During the second visit, the interviewer used their responses to the questionnaire as a basis for education and discussion. During the third visit, two weeks later, the interviewer oriented relatives to the group's aims and approach, finalised arrangements for their attendance, and answered further queries arising from the previous education session. A second copy of the Knowledge Questionnaire was left with the relatives at this point, which they were asked to complete and bring to the first session of the group. The experimental-group relatives completed the Knowledge Questionnaire for the third time after the final group session. Thus the effect of this short and simple education procedure on relatives' beliefs about their patients' problems could be assessed independently of the impact of the group.

Further self-report measures established how much control the relatives in the experimental group thought they and the patient had over the patient's general state of mental health and over the main problems they had, how well they thought they coped compared to others in similar circumstances, and how difficult they thought it would be for anyone to cope with their situation. The Knowledge Questionnaire and these additional assessments were not administered to the control group.

The experimental group were invited to attend a monthly group at the day hospital for approximately a year. The group lasted for 1½ hours and was run by the team's clinical psychologist (LK) and social worker (RH). Neither worker had been involved in the assessment and education procedures, and they were blind to the results of the assessments. Relatives were encouraged to discuss the practical problems and feelings which arose in the course of living with family members with a long-term psychiatric illness. The group focused on issues relating to expressed emotion, in order to reduce critical or over-involved attitudes and the level of face-to-face contact where these appeared to be unduly high. Relatives were also encouraged to share their experience of successful coping strategies and to ventilate some of the distress, grief and frustration known to be common in this group. A detailed account of the approach used in the group and of its efficacy is given in the following paper.

Patients and relatives in both the experimental and control group continued to receive routine day care throughout the period of the study. The centre is well-staffed, and attenders participate in a moderately intensive programme of community meetings and occupational and industrial therapy. Patients' medication and clinical state are closely monitored, while the daily programme focuses on patients' self-help skills and independence. Relatives typically have contact with care staff at about six-monthly intervals, but the system is intended to be responsive to need, so that contact can readily be increased at times of crisis.

## Results

The patients had a mean age of 36.1 years (range 22–66). Sixteen were men and ten were women. The experimental and control groups of patients did not differ significantly in age or sex. Seven members of the experimental group and 12 of the control group had never been married; however, since two of the relatives who refused to attend the group were spouses, the two groups were originally matched for marital status. The relationship of the relatives to the patient is shown in Table II. The sample had been ill for a long time: the mean length of contact with services was 15 years for the controls (range 2–50) and 19.5 years for the experimental group (range 9–40).

Four relatives refused the invitation to attend the group. Of the remaining 13 who attended at least one session, the majority came to all the sessions which were practically feasible for them. The mean number of sessions attended was nine. One pair of parents and one spouse proved to be intermittent attenders: these relatives were living with patients with rapid-cycling manic depression, whose clinical state varied much more widely than that of the other patients in the study.

The scores of the experimental and control groups within and between assessment periods were compared by use of $\chi^2$ tests and *t*-tests. When the data was at least ordinal, change scores were computed by subtracting the scores

TABLE II
*Relationship between supporters and patients*

| *Supporter* | *Experimental group (n = 13)* | *Control group (n = 17)* |
|---|---|---|
| Mother | 6 | 8 |
| Father | 5 | 3 |
| Spouse | 1 | 4 |
| Friend | – | 1 |
| Sibling | 1 | 1 |

obtained in the second set of assessments from those obtained during the first assessments.

### *Patients' measures*

The control group of patients was not matched for disturbance with the experimental group, and the latter showed a considerably higher level of subjective symptoms at the initial assessment, although the difference was not statistically significant ($t=1.28$, $P=0.10$). The level of disturbance in both groups was high (mean 26.9 in the experimental group and 15.9 in the control group). The mean number of symptoms fell in the experimental group (mean 22.8) and actually rose slightly in the control group (mean 17.1). However, although these changes suggested an effect of the intervention, the difference between the two groups in the amount of change which occurred was not statistically significant ($t=0.90$, $P=0.19$). Differences between the groups at the second assessment were also not significant ($t=0.59$, $P=0.28$). The groups were more evenly matched on objective symptoms and negative symptoms, and there appeared to be no effect from the intervention in these areas. No differences were found in the rate of relapse or exacerbation, which was low in both groups: two patients in the experimental group and four in the control groups experienced an episode of marked exacerbation.

Using relatives as informants, the experimental and control groups were compared on the behavioural measures. There was a significant and appreciable improvement in the independent role-performance of the experimental group over time ($t=1.91$, $P<0.05$). The overall level of behavioural disturbance fell, in comparison with a slight increase in the level of disturbance shown by the control group, although these changes did not reach significance. Examining changes in each subscale separately showed that the trend was for most of the scores for the experimental group to show some improvement, compared with no change or deterioration in the control group. The most sizeable difference in change occurred in disruptive behaviour ($t=1.82$, $P<0.05$). Change scores on other subscales did not reach statistical significance.

### *Relatives' measures*

The results of the EE ratings at first and second assessments are shown in Table III. There was no initial difference in the proportion of relatives in the two groups who fell into the high-EE or low-EE category ($\chi^2=0$). However, after the intervention a change had occurred: three of the experimental-group relatives moved from high-EE to low-EE, in contrast with one relative shifting into the high-EE category in the control group ($\chi^2=3.39$, $P=0.06$). The experimental group's mean frequency of critical comments decreased as much as the control group's increased: the difference between these change scores was significant at the 5% level. However, there were no significant differences between or within groups in the rating of warmth or over-involvement. The amount of face-to-face contact per week changed in the opposite direction to that expected, although not significantly: the experimental-group relatives and patients were spending an average of six hours more together by the end of the intervention, while the control group reduced the time they spent together by an average of five hours.

TABLE III

*Changes in relatives' attitudes over time*

| *Attitude measures* | *Experimental group (n = 13)* | *Control group (n = 13)* |
|---|---|---|
| *Expressed emotion* | | |
| Initial assessment: number of relatives | | |
| Low-EE | 6 | 7 $\chi^2=0.07$, NS |
| High-EE | 7 | 10 |
| Final assessment: number of relatives | | |
| Low-EE | 9 | 6 $\chi^2=3.39$, $P=0.06$ |
| High-EE | 4 | 11 |
| *Critical comments* | | |
| Initial | 9.00 | 6.52 NS |
| Final | 6.69 | 9.11 NS |
| Difference | −2.31 | +2.59 $t=1.66$, $P<0.05$ |

Relatives' perceptions of the restrictions on their own freedom of action, and their feelings of strain arising from coping with the problems of the disturbed family member showed no significant differences. However, the experimental group reported a significant improvement in intimacy and reciprocity in their relationship with the patient ($t=2.42$, $P<0.05$). A smaller, non-significant change in the same direction occurred in the control group.

The experimental group showed more changes in coping style than the control group. The strategies which were either abandoned or adopted by at least three relatives in each group are listed in Table IV. The experimental group abandoned a number of strategies which seemed likely to be unhelpful, and their efforts to cope became less diverse. The control group made fewer changes, although they were in a similar direction to those of the experimental group.

All the relatives appeared to be at least moderately well informed about the nature of their relative's disorder: the mean score on the first Knowledge Questionnaire was 6.37 out of a possible 10, and all but two relatives scored more than 50% correct. However, the scores changed little either before or after the intervention: the mean change score was less than 1 at both assessment points, and as many relatives scored fewer correct responses as increased their score at each re-assessment. There was no relationship between scores on the Knowledge Questionnaire and any EE indices, nor between EE indices and change scores.

One of the aims of the intervention had been to reduce the recognised tendency among relatives to blame patients for the symptoms or course of their illness. We also speculated that if relatives could be helped to feel more in control of the problems presented and aware of the value of their own coping efforts, at the same time as gaining an accurate appraisal of the difficulties of the task by learning about problems experienced by others in similar

TABLE IV
*Changes in relatives' coping styles*

| | *Experimental group* | *Control group* |
|---|---|---|
| *Strategies abandoned* | | |
| Putting off action | Yes | – |
| Preparing for the worse | Yes | Yes |
| Asking for advice | Yes | Yes |
| Trying to make plans | Yes | – |
| Passive acceptance | Yes | – |
| Keeping feelings to self | Yes | – |
| Criticising and blaming self | Yes | – |
| Wishful thinking | Yes | Yes |
| *Strategies adopted* | | |
| Taking up other activities | Yes | – |
| Calm discussions with patients | Yes | – |

circumstances, this might serve to reduce levels of EE. However, relatives' appraisal of their own level of control over, or ability to cope effectively with, the problems presented was low: few scored items to indicate they felt they had much control at all, either before or after the intervention. Nevertheless, five of the ten who responded to the item concerning confidence in their ability to cope with their feelings about the situation did report an improvement. By the end of the intervention, six of the relatives thought the patients had more control over how well or ill they were generally, and five thought they had more control over major specific problems.

Relatives were asked informally about their experience of the group: whether they had found it helpful, and which aspects had been positive or negative. All but one person had found the group supportive, and a welcome opportunity to sort out many issues. The exception was the relative of the only patient with a neurotic disorder, who stated that he could not identify with most of the problems brought up by other relatives. The factor most commonly mentioned as helpful was the opportunity to discover that there were other people with similar problems, who also found the situation very stressful and bewildering at times. Opportunity to learn new ways of behaving was not referred to by any relative, either as part of the positive experience of the group, or as something they would have liked more of. Similarly, no group member expressed a need for more information.

## Discussion

Relatives of the long-term mentally ill were offered a regular, although infrequent, opportunity to meet others in similar circumstances, in order to share problems and ideas about successful ways of coping. Our results show that this kind of minimal, clinically feasible, intervention can have a positive effect at several levels, even on top of an energetic and well staffed day-hospital service. Patients' clinical status showed a trend towards improvement and, perhaps more relevantly for this group, their ability to perform independently a range of domestic and self-help skills improved significantly. Relatives became less critical and reported improvements in the rewardingness of their relationship with the patient. Coping also seemed to change for the better, leaving several of the relatives more confident about how well they handle their feelings about the situation.

These trends are encouraging, since they suggest that the approach used in the intervention, which included efforts to lower levels of EE, but did not focus exclusively on this issue, can contribute positively to the process of rehabilitation in the long-term mentally ill. It has been suggested that, in this population, there may be a balance or pay-off between disability and illness, such that the cost of improving social functioning may be an increase in relapse rates and that, conversely, attempts to minimise the risk of positive symptomatology may enhance levels of social disability (Liberman, 1986). We had hoped to achieve some reduction in the very substantial levels of disability in the patients, and to this end were wary of facilitating a low-engagement style of coping in the relatives. The improvements in aspects of the patients' social functioning, the increase in the amount of time the family spent together, and the relatives' reports of increased intimacy and recognition of the patients' own potential to control their behaviour all point to the success of our efforts in this respect. The trend towards a decrease in positive symptoms, shown by the PSE results, was an additional, somewhat unexpected change.

The results frequently failed to achieve statistical significance, despite showing apparently substantial changes and between-group differences which seem likely to be clinically important. In part this was due to the small size of the sample, coupled with the large variation in the variables measured. In view of the fact that we were dealing with an unselected group, our positive findings must be treated with caution. A replication of this study with much larger numbers, to take account of this considerable variation, is necessary before we can be confident of the significance of our findings.

However, the patients were chronically and severely disabled, showing islands of competence amid a sea of problems, and substantial improvements in such patients occur only occasionally in traditional services (Bleuler, 1978). Further, both the experimental group and the comparison 'no treatment' controls were receiving a well staffed, intensive service, which may be beyond the power of many day-care facilities to offer. Therefore we had to show a treatment effect which exceeded that already achieved as a result of receiving this routinely high level of day care. Thus the odds were weighted against our being able to demonstrate any effect at all. Despite this, improvements were achieved, testifying that regular support offered to relatives as an adjunct to traditional services, and deploying merely three hours of professional time each month, is an effective use of resources.

Since the relatives' own ratings were used to estimate the patients' performance of domestic and social roles, the improvements indicated by the results cannot necessarily be taken at face value: they may reflect a lowering of expectations on the relatives' part, rather than a real increase in the patients' level of functioning. However, in either case, the results indicate a change for the better in the home environment.

The EE scores of relatives who attended the group were substantially reduced without the use of explicit or sophisticated behavioural techniques. Provision of a supportive and accepting environment where relatives have an opportunity to ventilate some of their more difficult feelings about their situation seems to facilitate these desirable changes without the necessity for more structured techniques. This unchallenging approach may be better adapted to meet the needs of supporters of the long-term mentally ill, who are likely to have long-established, entrenched attitudes and methods of coping which may be resistant to change, and who are no longer actively searching for information or advice, but who feel a need for support and reassurance to cope with their sense of burden.

As anticipated, offering these relatives education based around the Knowledge Questionnaire was not effective in changing their ideas about the disorder. For some this was because there was little room for improvement, and perhaps reflects their long familiarity with the problems, and the generally good contact between relatives and staff maintained by this particular service. For others, it appeared that the incorrect information they had about the disorder represented a set of personal beliefs rather than a deficit in knowledge, and as such could not be easily modified by simple instruction (Barrowclough *et al*, 1987).

The group was a positive experience for almost all the members, as was demonstrated by their regular attendance rates and the views they expressed afterwards. They found the opportunity to meet others in similar situations was particularly beneficial, and they came to realise that their problems were not unique, nor was their situation necessarily as bad as others. The therapeutic effects of discovering universality (Yalom, 1975) and making positive social comparisons (Wood *et al*, 1985) have been reported in other populations.

The patients themselves were a diverse group, and the family relationships were diverse in quality. Some relatives who attended the group had unique problems and would have benefited from more intensive, individual input, probably as an adjunct to the group meetings. Although specific diagnoses might seem less important than the disabilities evident in these patients, diagnosis does have relevance in enhancing the coherence and commitment of the relatives' group. The perceptions and reactions of relatives of those patients who were not suffering from schizophrenia posed particular problems. They identified less with the interests of the group as a whole, and their emotional responses to the patient seemed to be more volatile, possibly reflecting the greater volatility of the patient's clinical state. Indeed, the two relatives who became more critical fell into this subgroup. In view of this, it is impressive that the group, meeting rarely as it did, was able to establish and profit from considerable cohesiveness. It seems, therefore, that this kind of group cannot offer sufficient support to meet the needs of all the relatives who may be encountered in an ordinary clinical setting. Separate groups for the relatives of patients with schizophrenia, cyclical affective disorders and neurotic disorders may be preferable when feasible.

Those who rejected the offer of the group completely present a different problem. The baseline measures do not suggest that their needs differed from those of the participants in the group. However, their previous experience of contact with services may partly account for their reluctance to participate: either the care team had previously failed to gain their co-operation in planning the patient's treatment programme, or they had a history of conflict with services which might have led them to reject the idea of attending a regular group. Evidence points to the importance of close and consistent liaison with relatives from the point of first contact with services (Birchwood & Smith, 1986; MacCarthy, 1988), and the necessity of taking the relatives' own beliefs and requirements into account in offering services, if subsequent relationships are to achieve the desired level of collaboration.

Finally, our sample, who were prepared to accept a high level of contact with the day-care facility, may be unrepresentative of the long-term mentally-ill population as a whole. However, it is perhaps a truism that it is impossible to treat people who are not there to be treated. Those patients who are poor or minimal attenders at day-care centres are an important subgroup who present particular management difficulties (Compton & Brugha, 1988). Indeed, working with the relatives of such patients may be the only feasible option open to care staff. However, such relatives will face particular problems and burdens not necessarily shared by the group we worked with. The intervention reported here aimed to supplement the efforts of the day-care staff in providing a coherent and integrated service to the family as a unit. Part of what was being 'treated' therefore, was the relationship between the day-care team and the family unit.

We would argue that this sort of specific, time-limited group needs to become a routine part of the clinical service offered by community care facilities, even if relatives and patients have achieved an equilibrium in the context of persistent chronic and severe difficulties. Ideally, this should be initiated earlier in a patient's career, to avoid the development of persistent failures of communication between the clinical team and carers. Guidance about attitudes and coping styles is also indicated before these settle into maladaptive but entrenched patterns. However, detailed information and explicit behavioural guidance may not be as crucial a requirement for relatives coping with really long-standing problems. The opportunity to acknowledge and share some pent-up feelings with others in similar circumstances seemed particularly welcome to this group, and may be the best focus for intervention with relatives of the long-term group, who cope with a diverse range of disabilities and deficits.

Acknowledgements, references, and authors' details are given at the end of the following paper, on page 782.

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# Counselling the Relatives of the Long-Term Adult Mentally Ill
## II. A Low-Cost Supportive Model

LIZ KUIPERS, BRIGID MacCARTHY, JANE HURRY and ROD HARPER

A psychosocial intervention is described geared to the needs of carers of the long-term mentally ill, which is feasible for a busy clinical team to implement: relatives were not selected for the group by patient diagnosis or motivation and little extra staff input was required. An interactive education session at home was followed by a monthly relatives group which aimed to reduce components of expressed emotion (EE) and to alleviate burden. The group facilitators adopted a directive but non-judgemental style, and constructive coping efforts were encouraged. The intervention was effective at reducing EE and improving family relationships. The study offers a realistic model of how to offer support to people providing long-term care for the severely mentally ill.

The emotional demands on relatives who provide support for those in continuous and intensive contact with psychiatric services may continue for years. Relatives of the mentally ill have voiced much dissatisfaction with services, and with clinicians who have traditionally blamed or exploited them without recognising that they are an important community resource with needs of their own (Kuipers & Bebbington, 1985). Carers need to have ready access to sympathetic staff who are familiar with their situation and who can help them to ensure that patients maintain and develop skills and independence despite their residual disabilities. Such help needs to be long-term, supportive and geared to maintaining gains rather than to treating symptoms.

In the project reported here, we were interested in developing a psychosocial approach which suited the specific needs of supporters of the long-term group. We also wanted to find a model which could be used by a multidisciplinary team (Watts & Bennett, 1983). It had to be feasible, acceptable to all grades and disciplines of staff, and integrated into the general clinical work of the team. While there has been considerable interest in the methods and results of intervention trials which have been published (Leff *et al*, 1985; Falloon *et al*, 1985; Hogarty *et al*, 1986; Tarrier *et al*, 1988), we have observed a general attitude of reluctance in clinical teams to take on what is seen as specialised and time-consuming work. While in our own clinical team this was not a problem, professionals in many settings say they lack both the time and expertise to work in depth with relatives. A case load usually includes a large number and wide variety of patients with neurotic as well as psychotic disorders, and relatives' needs may not be given priority. Even if relatives' needs are recognised, staff may not be clear about how best to offer them support, and resources may also be limited.

We wanted to test whether a minimal intervention, geared to the specific needs of long-term patients and their relatives, could be shown to be feasible as well as effective. In order to take account of the constraints imposed by a typical clinical situation, the programme made realistically limited demands on staff time, and used care staff currently working in one clinical team. This team employed a case-management approach to patients and aimed to be responsive to relatives' needs as part of its routine clinical practice. The intervention was not therefore a first step in initiating contact with a neglected group of relatives, but rather extended an already existing pattern of clinical practice. All relatives of current attenders were invited to participate, irrespective of their motivation or likely ability to function effectively in a group. As patients' diagnoses were not a criterion for selection, the group included relatives of patients with schizophrenia, major affective disorders and neurotic disorders. All patients also had long-standing and severe disabilities in the area of social performance.

Details of the sample, the assessment procedure and evaluation of the results of the intervention are reported in the preceding paper. The methods we employed, the model used and typical problems which were raised will be described here.

Relatives were offered an interactive education session completed in their home with a research worker (BM or JH), and then invited to participate in a monthly group meeting. A group approach is cost-effective, since it allows several families to be seen together and participants can learn and share from each other as well as from professionals.

## The group

### Aims

The group meetings had several overall aims:

(a) to facilitate social interaction among the relatives in order to counteract feelings of isolation and stigma commonly reported of supporters of psychiatric patients (MacCarthy, 1988)
(b) to repeat and reinforce the acquisition of information about diagnoses and expectations given in the education session
(c) to offer specific help with problem-solving
(d) to increase tolerance of negative symptoms and accompanying behaviour problems such as inactivity or poor role performance, which are commonly misinterpreted by long-term carers and are associated with high levels of criticism
(e) to help relatives hold more realistic expectations about the future
(f) to help both relatives and patients achieve a level of adult independence despite the patients' disabilities; this is particularly a problem for emotionally over-involved relatives.

The aims were specifically geared to reducing the key expressed emotion (EE) components of critical comments and over-involvement by increasing relatives' understanding and tolerance of symptoms and helping them to achieve as much autonomy as possible. Efforts were also made to reduce burden and decrease isolation by the sharing of problems.

### Structure

The setting was a quiet room in the district services centre, a day and residential facility which is designed to serve the needs of the long-term mentally ill from its local catchment area. Two of the authors (LK, RH) were present to act as facilitators. An informal social atmosphere was encouraged, and tea and biscuits were served halfway through sessions. The meetings were tape-recorded with the consent of participants. They lasted an hour and a half and were held monthly in mid-afternoon. As most relatives were retired or near retirement age and the meetings were infrequent, this timing was acceptable. Monthly intervals were chosen since this had been the actual attendance rate of relatives in a previous study (Leff *et al*, 1982) and because relatives of such long-term patients rarely encounter new problems. Relatives attended the group for a year. Two members joined the group after six sessions, so it met regularly for a total of 18 months to accommodate these later arrivals.

### Attendance

Relatives came to ten meetings on average (range 5–14) and each meeting was attended by an average of six relatives (range 4–11). A facilitator was always present.

### Strategies

The model used for the intervention was based on elements of three different approaches:

(a) ideas developed during previous work with a high-EE group (Leff *et al*, 1982)
(b) group counselling techniques
(c) behavioural skills training.

All three elements were necessary to deal with the range of difficulties that relatives presented, and are described below.

### Leadership style

Throughout the sessions the facilitators adopted a non-confrontational but directive style. They encouraged the group to focus on one topic at a time and to follow a theme through to a constructive conclusion. Unless they were channelled in this way, sessions easily disintegrated into several concurrent conversations. Psychodynamic interpretations of either group or individual processes were avoided. A positive, non-judgemental atmosphere was fostered within which relatives could be frank in discussing difficult issues, while also being able to laugh at absurdities when they arose.

### Engaging relatives

Attending a group requires considerable motivation. High drop-out rates have been a feature of early intervention studies with relatives of long-term patients (e.g. Hudson, 1975). We therefore used the home interviews which were undertaken for the evaluation study reported in the preceding paper as an opportunity to establish contact and build up rapport. The use of the Camberwell Family Interview as our major assessment instrument allowed us to demonstrate that we were interested in the relatives' own viewpoints and their particular problems. After the initial evaluation, relatives filled in the information/education questionnaire, and one of the authors then made a further home visit to discuss the issues that emerged. At this point, the possibility of attending the group was suggested as a way of expanding on this information, and as a setting where problems and support could be shared. Despite the length of time that these patients had been in contact with local services, the relatives had not previously met each other. Lifts were offered to encourage attendance, but because of the central position of the day facility, transport was not a problem. All the relatives knew at least one of the facilitators before joining the group, and this seemed to reduce early anxieties considerably.

### The refusers

Although the majority of relatives were successfully engaged, the four refusers form an interesting subgroup. For two, both relatives of people with schizophrenia, the timing of the offer was inopportune. One wife had felt dissatisfied with services offered in the past and had often refused help before. She had, however, just completed a relatively intensive series of family sessions, which she and her husband had attended with great reluctance. At the time of our intervention, some problems had been resolved and she felt that she did not wish to risk this equilibrium. The second relative, a mother, was interested in attending the group, but as she had recently resolved to become more independent of her son and consequently had begun a new job, she could not get to the group.

A third relative, cohabiting with a patient suffering from manic depression, had severe problems of alcohol abuse and associated memory loss. Although he did attend two group meetings, he clearly found it difficult to cope with the level of discussion. Participation in such groups requires basic levels of cognitive and social skills, which a proportion of relatives, some of whom have been patients themselves, will lack.

Finally, one father expressed interest in the group, but never actually attended. This seemed to be connected with his wife's view of the services: she suffered from agoraphobia, never left the house, and refused all personal contact with the clinical team. The father managed to visit the centre occasionally, at times of crisis, but could not come more regularly. It seems that a regular group cannot meet the needs of all relatives, and a more flexible intervention may be needed for some.

### Facilitating communication

Improving relatives' communication skills may not only enhance the effective functioning of the group but also improve interaction with the patient at home.

At their first session, all relatives were asked to give a little information about themselves and their situation. This quickly helped families to recognise areas of common ground, but also allowed participants to control their level of intimacy with the group, and reduced anxiety. By structuring 'turn-taking' in this way, equal participation and alternating listening and contributing in sessions were modelled. Experimental work and previous experience (Kuipers *et al*, 1983; Berkowitz *et al*, 1984) has shown that high-EE relatives are particularly poor listeners and may not readily absorb constructive advice. Listening skills had to be fostered for some high-EE relatives, who tended to dominate meetings. Relatives were discouraged from talking at the same time as other participants, or were asked specifically to listen to someone else, and incipient monologues were interrupted. Some relatives, however, needed to be canvassed directly before they could contribute their views.

The facilitators tried to create an open atmosphere, where disagreements could be aired, and resolved. Setting limits can be particularly difficult for relatives who may resent something but avoid discussing it with the patient for fear of provoking arguments or clinical deterioration. A more direct and constructive style of communicating dissatisfaction was encouraged in the group.

## Problem-solving

Elements of a behavioural skills training approach were used. Firstly, once a problem had been identified a detailed description was obtained, and the circumstances of its occurrence were specified. A range of possible solutions was elicited from the group. The facilitators then encouraged the group to focus on one solution, which was broken down into a series of small, potentially manageable steps which the relative could attempt before the next session. In subsequent meetings relatives were invited to report what had happened. Attempts to use new strategies were reinforced by the approval of the facilitators and other relatives in the group. Since relatives often dismissed new behaviour patterns as trivial because of the magnitude of the overall problem, they were encouraged, by noting progress and identifying their own contribution, to recognise the value of achieving small changes. In the long term, the intervention aimed to foster a flexible but consistent approach, which was capable of responding to changing circumstances but also created a predictable home environment for the patient.

## Emotional containment

The emotional burden of providing long-term care for the mentally ill was a recurring theme in the sessions. As trust and cohesion developed in the group, the negative emotions that relatives felt, such as guilt, anger, frustration, bitterness and grief, were more freely shared. It was emphasised that the experience and expression of these feelings was both understandable and acceptable. Facilitators pointed out that staff members could also feel helpless and frustrated in the face of some patients' seemingly overwhelming problems. Relatives were able to be supportive of each other since it was acknowledged that many of the group had faced the same difficult feelings. Another important process was the adjustment of expectations. Reframing a behaviour, previously seen as a failure, as a small success helped to encourage optimism in place of resignation: relatives are frequently dissatisfied with the patient and services but feel helpless to effect any change. It was stressed that time itself could be therapeutic for this long-term group, and that gradual improvements could be identified which had taken several years to evolve.

## Using assets

Despite the relatives' very real problems and burdens, it is important to remain aware of their assets and adopt a non-blaming stance (Ferris & Marshall, 1987): they themselves are not disabled by mental illness, but are nevertheless reacting to an abnormal and stressful situation. Thus it is possible to tap ordinary resources of humour, sociability and tolerance. Relatives took this beyond the group, offered lifts, inquired after each other's well-being, asked about absent group members. As the rewards of long-term caring include isolation and stigma, the group was a welcome social occasion for some members.

## Themes

Initially, much of the discussion focused on relatively external issues such as the need for information, the burden of caring and the continuing stigma of mental illness. As trust developed, more internal, emotional issues such as grief and the need to change expectations came to dominate the content of the sessions. The vulnerability of patients whose serious social disabilities often left them unable to care for themselves reliably and open to exploitation by more competent acquaintances was a particular issue for this group. Some of the relatives recognised that the special needs this created had to be balanced against providing a deliberately restrained level of care and protection which would not interfere with the patient's ability to develop independence and autonomy. The grief relatives experienced as they adjusted first to the diagnosis and then to the implications of long-term illness in its effects on the patient and their own lifestyle was also apparent. All relatives worried about what the future held and who would continue to care for the patient when they no longer could. Few were confident that hostels, flats or day facilities could provide the levels of care that they achieved.

### Ending the group

After one year most families stopped attending regularly, but kept some intermittent contact. The group was finally closed after 18 months. Only one of the relatives wanted it to continue. Most felt that after a year it had achieved most of its aims for them, and had become repetitive. Interestingly, they were united in preferring regular contact with staff, which aided access to team decision-making, rather than interventions solely at times of crisis. Following the experience of sharing problems and support in the group, they asked for regular family meetings with staff which included the patients. This had not been an option which any of the families had favoured before joining the group.

## Discussion

A low-cost, relatively infrequent intervention with clear aims proved to be beneficial in certain respects for both relatives and patients. The details of these benefits are discussed in the preceding evaluation paper. We took on all 13 relatives who were willing and able to attend and who were involved with patients currently being cared for by the staff team; this was, in any case, about the maximum number that could be comfortably accommodated in the group if it was to function effectively. Those who support the long-term mentally ill often have entrenched views and coping patterns, and we were interested to see if any changes could be effected. Not everybody could be helped in this way, however. One relative experienced a deterioration in the situation at home during the period that the group met. For other relatives, the process of changing expectations and understanding difficult behaviour had only just begun by the end of the group. Relatives of the two patients suffering from bipolar depression benefited least, and these patients also relapsed during the trial.

This raises the question of whether it is feasible or effective for a single group to include relatives supporting patients with different diagnoses. In our setting, since only a minority of patients had a diagnosis other than schizophrenia, numbers would have been too small to create viable separate groups. However, our experience indicates that as relatives of non-schizophrenic patients found the group less helpful, single-diagnosis groups may be preferable. Such groups would probably be less confusing for supporters, and seem more likely to aid the valuable process of social comparison which was cited as a very positive aspect of the group by most of the participants. At this stage it would be premature to reject mixed-diagnosis groups as possible interventions, particularly since clear-cut diagnoses are often difficult to establish in the long-term population. Further, we would want to discourage an attitude which might exclude families designated 'unsuitable' from receiving help. However, it does appear that professionals should be cautious to maintain an individual approach to the needs of both long-term carers and patients. Some families, particularly in the non-schizophrenic group, may require a more intensive approach that can cope better with an illness which is likely to have a fluctuating course. Carers found it particularly difficult to cope with the contrast between the optimism which both they and the patients felt during manic or recovery phases and the loss of hope which accompanied the return of severe depression.

Adequate preparation for the group was very important because it greatly assisted the engagement of the relatives. Visiting each family at home to provide information and give them an opportunity to explain their own viewpoint in detail before the group began, the relatives' familiarity with the facilitators, and an informal social atmosphere during sessions were essential parts of this process. At one point the relatives asked to visit local hostels as a group. We were able to organise this, and it clearly contributed to establishing the sense of partnership we aimed to foster.

The group also highlighted how far apart the perspectives of the clinical team and carers can become during persistent illness. Staff members would often criticise relatives and assume that they were exacerbating patients' difficult behaviour, while relatives did not always appreciate the inevitable limitations of clinical care, and assumed on their part that the team should do more to contain or prevent behaviour such as suicide attempts. The experience of the group emphasised how easily professionals can take on an antagonistic rather than a collaborative stance in these circumstances.

In conclusion, despite the pressures of working in a busy clinical team, it proved possible to offer a specific, time-limited intervention to the relatives of the long-term mentally ill. This effectively enhanced their coping skills, reduced isolation and negative affect towards patients, and improved relationships between relatives and patients. The patients' social performance improved and their behaviour became less problematic at home (preceding paper).

The model used in the intervention was developed from previous work which relied on insights gained from EE research, but was adapted to the needs of the long-term population and the clinical team. There is recent evidence that discussion-based group work is an effective intervention for high-EE families (Tarrier *et al*, 1988). In the form described here, it is both an inexpensive and feasible approach which requires little extra staff input and is acceptable to staff and relatives. It could be offered routinely to families as part of a tertiary prevention strategy, both to limit the damaging and disabling effects of long-term illness and to support carers in the community.

## Appendix

### Three families

In order to illustrate the range of problems which families presented, three cases, none of which were unreservedly successful, are described in more detail.

### The sceptic

This relative was a 73-year-old mother, a single parent whose husband had died many years ago. Her son, John, had first been in contact with services nine years previously, with bouts of depression. More recently, this had developed into schizophrenia, with reports of hearing voices and thought block. He had also become aggressive and broken furniture at home. Before the intervention his mother had a very rigid view of her son's problems: she had never really believed that he was ill; she described him as lazy and unwilling to do things, and was very critical of him for not helping with household tasks. "He sleeps and eats and puts on weight, does not do any gardening, nothing, doesn't do anything." In order to help this mother understand and tolerate John's negative symptoms, the similarities with other patients' problems were repeatedly underlined, and it was pointed out that he had to cope with the frightening and disturbing aspects of being ill, as well as with the visible signs of neglect and apathy which she saw. John attended the day facility regularly and kept appointments reliably, although this was a great effort for him, and he had not been violent recently. Although he did little housework, he functioned better than most others in the group. The mother began to appreciate that John was managing some things well, but still tended to take these things for granted and her expectations for his progress remained unrealistic.

The changes in her EE ratings (Table I) support a clinical impression that some circumscribed development had occurred. Her tally of critical comments did not nearly approach the low-EE range by the end of the group, but she became appreciably less critical. Her level of warmth remained minimal. John described her as nagging, and she was often exasperated with his lack of achievement. Over the months, she was able to control this somewhat, and this was reflected in changes in her coping strategies. She also learnt to laugh about their mutual problems. She abandoned some maladaptive coping strategies such as daydreaming and showed signs of adopting some constructive ones such as trying to step back from the situation. When relatives are so critical they are also likely to be resistant to change, particularly if they have held such attitudes for many years. Although this mother attended every meeting faithfully and made some limited progress, she remained sceptical that the group could be useful. She felt that she had opportunities to talk about her problems elsewhere, and therefore did not need the group for this purpose. However, she did discover that others had worse problems than her, and welcomed the increased contact with staff, whom she now felt she could call on in an emergency.

### The failure

The relative was a 50-year-old man whose twin sister, Jane, lived with him. She had been diagnosed as depressed and anxious but also displayed a number of severe behavioural problems, such as inactivity, incontinence, neglect, and verbal and physical abuse. She had been in continuous contact with services for 25 years. In the last two years, she had taken to staying in bed all day and did nothing for herself. She attended the day facility irregularly and very reluctantly. Her brother had to struggle to get her up and

TABLE I

| | *The sceptic* | | *The failure* | | *The coper* | |
|---|---|---|---|---|---|---|
| | *Before intervention* | *After intervention* | *Before intervention* | *After intervention* | *Before intervention* | *After intervention* |
| Critical comments | 17 | 12 | 21 | 31 | 3 | 0 |
| Hostility | 1 | 1 | 3 | 1 | 0 | 0 |
| Emotional over-involvement | 2 | 1 | 2 | 4 | 0 | 0 |
| Warmth | 1 | 0 | 0 | 0 | 4 | 4 |
| Positive remarks | 5 | 5 | 0 | 0 | 6 | 3 |

dressed each day, which made him so late for work that he was about to lose his job. His own life-style was severely restricted by his sister's problems, although these restrictions seemed to fit in with some of his own needs.

Because he had to take more time off work, the brother was reluctant to attend the group. During the year that the group met, his sister's social functioning deteriorated further, which set him apart from the other group members whose relatives made some gains. He felt very strongly that a different drug regime would benefit his sister, and spent much of his time in the group talking about this. He could be prevented from dominating the group, but had difficulty listening to other members' problems. He was able to express some of his anger and frustration, both with his sister and with staff. The major disruption to his life that his sister's problems caused evoked sympathy in other group members.

During the group, the brother's EE ratings deteriorated (Table I). He found it harder than ever to leave for work in the mornings and increased his level of criticism and over-involvement. Despite his exasperation, he became less rejecting, although generally his coping efforts became less effective. For instance, he started daydreaming and stopped trying to discuss things calmly with his sister.

He said that although he had occasionally found the sessions useful, he would have preferred to use the valuable time to do practical things at home. He thought that Jane's problems were rather different from those of others in the group: he had to face a greater range of problems, and only he had to deal with emotional blackmail.

Shortly after the group ended he died, quite unexpectedly. His sister was admitted to the centre and her behaviour deteriorated further. She is now known to suffer from an organic syndrome in conjunction with her emotional problems. Although they are unusual, problems of this sort, with multiple origins, may occur among the families of long-term patients, and some consideration is required of the specialised help that such severely disabled patients need. This relative was probably right in recognising that the group could not address his specific needs.

### The coper

This 77-year-old widow lived with her schizophrenic son, who had been in continuous contact with services for the last 16 years. She had a wide range of problems to deal with, usually associated with acute phases of the illness, as her son, Richard, was constantly disturbed by severe psychotic symptoms. He could do very little around the house, and often failed to arrive at the centre if he travelled by himself, as he would get off the bus at the wrong stop and return home. Despite being intellectually very able, he could not concentrate to read, watch TV or complete even simple tasks. The mother managed these problems well and rarely complained, but felt very isolated and distressed at times. She was physically ill so she missed some meetings, but always came if she could. She used the group to reduce her isolation and to discuss her difficulties. She was usually able to make suggestions for others, as she was familiar with most of their problems. When she first came to the group she was low in EE, and so would have been excluded by most intervention trials, despite her difficulties. At the end of the intervention she was still low-EE, but no longer had any critical comments, which suggests some improvement (Table I).

Despite her low-EE attitudes, she also described adaptive changes in her coping strategies, such as being able to tell Richard more clearly what she disliked about his behaviour. She was encouraged to set clear, consistent limits without anger. She found the group very interesting since it had opened her eyes to other peoples' problems and made her feel less isolated with her situation. She felt that she had always been realistic but that the group had helped her to face things more calmly.

This case suggests that a group of this type can benefit even those who are coping well but still experience stress and social isolation that can result from long-term caring. Usually only relatives rated high in EE have been offered help, a practice that has been criticised (Birchwood & Smith, 1987) as it excludes families with other needs.

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# The Natural History of Mental Disorder in Old Age

## A Long-Term Study

JOHN R. ROBINSON

In a prospective study, 153 consecutive new referrals to a psychogeriatrician in Oxfordshire in 1973 were followed up for 15 years. The percentage of the over-65 population at risk was 0.27 and, of those aged over 80, 0.6. Alzheimer's dementia and depressive illness comprised over two-thirds of referrals. A quarter became permanent admissions, half of them with Alzheimer's dementia, 19% of whom were alive five years later. Depressive illness, at ten years, had a mortality 1.2–1.6 times that of the population at risk. The distinction between Alzheimer's dementia and depressive illness, based on their natural history and causes of death, was reinforced.

In the past 150 years, the expectation of life has approximately doubled, from 40 to 80 years (Hayflick, 1982). Arie & Jolley (1982) comment, "Nearly 15 per cent of the population of Britain is now aged 65 or over, compared with less than 5 per cent at the turn of the century". Grundy (1984) comments, "Today there are two and a half times as many people over 85 as there were 30 years ago," and again, "Those aged 85 spend on average 12 days a year in hospital, compared with under one day a year for nearly all those aged 55 and just over two days a year for those aged 65". Moreover, she goes on to say, "Between 1970–72 and 1978–80 life expectancy at age 85 increased by about six months to 4.6 years for men and 5.6 years for women". Arie & Jolley (1982) point out that, "Some 50% of all mental illness beds in England are now occupied by people over 65 years, and the elderly account for between 20 and 40% of psychiatric admissions". The inadequacy of the traditional ways of coping with the health problems of more old people resulted, in the 1960s, in the establishment of specialised psychogeriatric services.

In Oxfordshire, between 1971 and 1980, the number of people aged over 65 rose by 21.4%, comprising an increase in those aged 65–74 of 22.0% and in those aged over 75 of 20.3%. The corresponding figures forecast for the period 1980–88 were 8.9%, comprising 4.3% and 16.9% respectively. The rise in those aged over 65 would be less steep, but a disparity was appearing between the proportions of the old and the very old.

The natural history of mental disorder in old age has been considered in studies of prevalence (Kay *et al*, 1964) and of hospital admissions (Roth, 1955), and so a long-term follow-up study based on all new referrals should contribute to understanding the disorders and planning services. The present study is a prospective 15-year follow-up of all the consecutive new referrals in 1973 to a psychogeriatric unit in Oxfordshire, addressing: the relationship of the referrals to the Oxfordshire population; the diagnoses and presenting problems; the outcome, with regard to mortality rate, the state of the survivors, and permanent admissions to the unit; and the causes of death.

## Method

### Subjects

In 1973, the Oxford catchment area had a population of 490 100, of whom 54 500 were aged over 65. This population was served by the Warneford Hospital, and the Littlemore Hospital, at which the psychogeriatric Isis Unit is based. General practitioners could refer patients to any consultant, although old people tended to be referred to the Isis Unit which provided for 75 in-patients and 36 day patients. Accurate figures are not available for 1973, but it is estimated that the author, the Isis Unit consultant, took at least a quarter of all new referrals aged over 65 and probably half of those referred with dementia, and these were accepted from any part of the catchment area. The policy encouraged early referral and a plan of management based on home assessment.

The subjects were the consecutive new referrals from 1 January to 31 December 1973, inclusive. A new referral was defined as a referral to the Isis Unit consultant, from any source, of any patient aged 65 or over, or under 65 if suffering from an organic brain syndrome, who had not previously been referred under these criteria. Those subsequently managed both with and without admission to hospital were included.

The sources of referral, in percentages, were: the general practitioner directly, 50; the general practitioner, through a psychiatrist wishing to use the specialised service, 20; geriatrician, 21; other physician or surgeon, 6; other source, 3.

The place of assessment was, as percentages: Isis Unit as out-patient, 43; geriatric hospital, 20; local authority residential home, 11; patient's own home, 11; other hospital, 8; at another out-patient department, 4; other, 3.

The reasons for referral in percentages, were: for support with management, 37; for opinion on management, 37; for opinion on diagnosis, 16; to take over management, 10.

The main presenting problems which led to referral were categorised in 13 groups after the classification of Margo *et al* (1980). The percentages were: subjective suffering, 22.9; agitated, restless, interfering behaviour, 18.3; physically ill/weak, 13.7; wandering, 11.8; uncooperative, 8.5; aggressive, 6.5; socially unacceptable behaviour, 6.5; danger to self and others, 3.3; repeated questions and need for reassurance, 1.3; complaining and refusing to conform, 1.3; noisy, 0; other, 4.6; assessment only, 1.3. For comparative purposes, 'physically ill/weak' and 'subjective suffering' were grouped into a broad category of subjective suffering, and the behavioural problems were grouped into a broad category of behaviour impinging on others.

## Assessment procedure

History and clinical examination were carried out, in each case, by the Isis Unit consultant. Information was recorded under specific items and in a formulation. For Alzheimer's dementia and depressive illness, the disorder was rated as mild, moderate, or severe, according to level of functioning, degree of independence, and subjective state. Two weeks were allowed in which to modify the initial diagnosis, after which any change in diagnosis was recorded as a disagreement between the initial and final diagnosis. Where psychiatric presentation was of a mixed type, a diagnosis of a dementing illness would take precedence over one of functional disorder, and would be the recorded diagnosis. A 'shaky memory' in advanced old age was not considered to constitute a dementing illness. Alzheimer's dementia was defined as an irreversible global loss of mental function, of insidious onset, without clouding of consciousness, and without evidence of a different process. Depressive illness was classified after Pollitt (1965), where physiological depression is characterised by physical symptoms or a 'functional shift', whereas psychological depression, although beyond ordinary means of amelioration, does not show this characteristic. Personality disorder refers to a state characterised by problems with interpersonal relationships, with society, and with work record, in various combinations, where the history suggests that these problems have emanated from personality development.

An admission to the Isis Unit, long or short, was defined as permanent when the patient was never discharged, but remained in Littlemore or was transferred.

## Follow-up

The follow-up study, by the same consultant, was carried out at 2, 5, 10, and 15 years. Clinical progress, and the date, place, and cause of death, including post-mortem findings, where available, were recorded, and the state of the survivors was rated. A rating of 'improved', 'same', or 'worse', in relation to the original disorder, was applied at the follow-up point; interim temporary improvement or further episodes or exacerbation of illness would not exclude a rating of 'worse' or 'improved', respectively.

The source of information for numbers of cases was as follows: personal observation, 136; staff of residential homes, 7; hospital notes, 5; other hospital staff, 2; general practitioner, 2; relatives, 1. Usually the source was multiple, especially from community nurses and general practitioners. The Oxford Record Linkage Study is a computerised programme in which basic data about patients are related to family history and episodes of illness; here it was used mainly to discover the place and cause of death. Information was obtained from post-mortem examination in 43 cases.

## Analysis

The results were not fully analysed until the study was complete, so that the effect which emerging information would have on assessment would be reduced.

## Pilot trial

The method was tested by a pilot run from November 1972 to January 1973.

# Results

## Subjects

In 1973 there were 153 new referrals (100 women, 53 men). Their age range was 49–93 years, mean 76.6 years; 64.1% were aged over 75, and 40.5% over 80. Their civil status was married, 28% single, 13% separated, 3% widowed, 56–65% of the women and 38% of the men. Between the years 1973 and 1987, inclusive, there was a total of 2396 new referrals, giving a mean annual rate of 159.7.

### *Relationship to population at risk*

Of the 153 new referrals, 146 were aged over 65, with a female:male ratio of 2:1; the equivalent ratio for the population at risk was 1.5:1. The referrals aged over 65 represented 0.27% of the over-65 population at risk; this percentage rose to 0.49% for those aged over 75, and to 0.6% for those aged over 80. The percentages of the population at risk for women and men respectively were: aged over 65, 0.30 and 0.22; aged over 75, 0.49 and 0.50; aged over 80, 0.59 and 0.62.

## Diagnostic categories

Table I shows the distribution of the disorders according to final diagnosis, which agreed with the initial diagnosis in all but three cases. Alzheimer's dementia comprised 38.5% and depressive illness 30.1% of all new referrals. For Alzheimer's dementia, 43% of the women and 30% of the men were affected; for depressive illness the proportions were 30% each. Depressive illness was divided between physiological depression, with 24 cases, and psychological depression, with 22 cases.

TABLE I
*Diagnostic categories of consecutive new referrals in 1973*

| | *Women* | *Men* | *Total* | *Percentage of all new referrals* |
|---|---|---|---|---|
| *Functional disorder* | | | | |
| Depressive illness | 30 | 16 | 46 | 30.1 |
| Schizophrenia–late onset | 4 | 2 | 6 | 3.9 |
| Schizophrenia–chronic | 3 | 2 | 5 | 3.3 |
| Personality disorder | 12 | 3 | 15 | 9.8 |
| *Organic brain syndrome* | | | | |
| Alzheimer's dementia | 43 | 16 | 59 | 38.5 |
| Arteriosclerotic dementia | 2 | 5 | 7 | 4.6 |
| Other dementia | 2 | 2 | 4 | 2.6 |
| Cerebral tumour | 1 | 1 | 2 | 1.3 |
| Confusional states | 3 | 6 | 9 | 5.9 |
| Totals | 100 | 53 | 153 | 100.0 |

For Alzheimer's dementia 61% and for depressive illness 30% of referrals were over the age of 80. The mean age difference between the two disorders was 4.3 years. Alzheimer's dementia peaked between 75 and 85 years of age; depressive illness showed a more even distribution, with a peak ten years earlier.

### Behaviour and suffering

Considered from the perspective of the two broad categories, 'subjective suffering' and 'behaviour impinging on others', the main presenting problem was: subjective suffering, 56 (36.6%); behaviour impinging on others, 95 (62.1%); assessment only, 2 (1.3%).

For Alzheimer's dementia and depressive illness, respectively, the corresponding percentages were: subjective suffering, 15 and 74; behaviour impinging on others, 83 and 26; assessment only, 2 and 0. For personality disorder, the third largest diagnostic category, with 15 referrals, the main presenting problem was one of behaviour impinging on others in all patients.

### Outcome

The mortality pattern, for all diagnostic categories, between 1973 and 1988, is shown in Fig. 1, and Fig. 2 compares this pattern for Alzheimer's dementia and depressive illness. The death rate, and the state of the survivors, at 2, 5, 10, and 15 years for Alzheimer's dementia and depressive illness are summarised in Table II.

At two years, 75 (49%) of 153 new referrals were dead: 58% of the men, and 44% of the women. After two years the death rate slowed down. At five years, 112 (73.2%) were dead: 81% of the men, and 69% of the women. A further slowing of the death rate then occurred. At ten years, 139 (90.9%) were dead: 92% of the men, and 90% of the women. At 15 years, 148 (96.7%) were dead.

### Changes of residence and state of survivors

There were, for the survivors, at two, five, and ten years, 46 changes of residence. For the 59 with Alzheimer's dementia, there were 26, and for the 46 with depressive illness, 11 changes of residence. Most of these 46 changes occurred between referral and the two-year point – for all the referrals the proportion was 83%, for Alzheimer's dementia 92%, and for depressive illness 64%. Changes of residence were least frequent for survivors who, at the two-year point, were rated as 'improved' (24%), and most frequent for those who, at the same point, were rated as 'worse' (90%).

### Permanent admission

There were 40 permanent admissions (21 women, 19 men). They comprised 26% of all the new referrals, among whom the female:male ratio was 1.9:1. Their mean age at the time of admission was 76.9 years (women 78.2, men 75.5 years). For the 59 new referrals with Alzheimer's dementia, 21

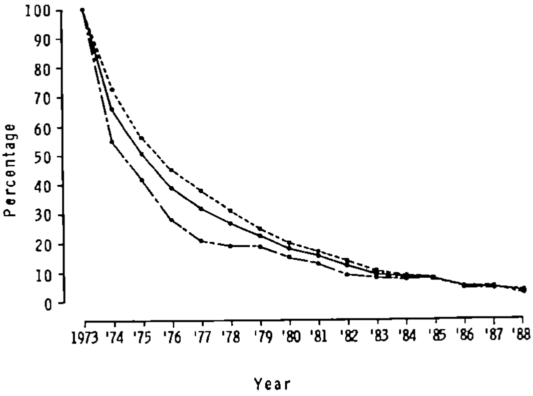

FIG. 1 Yearly survival rates for all diagnostic categories (all patients, $n=153$, ●——●; women, $n=100$, ●– – – –●; men, $n=53$, ●— — — —●).

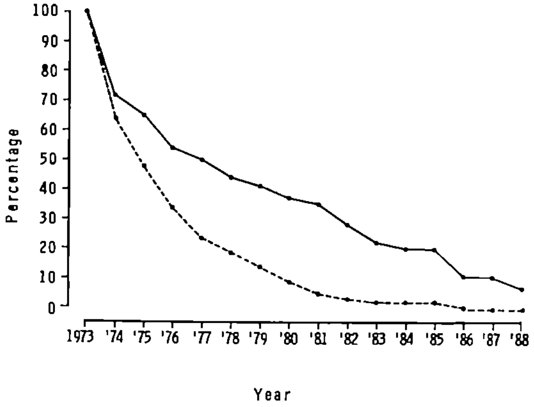

FIG. 2 Yearly survival rates for Alzheimer's dementia ($n = 59$, ●— — —●) and depressive illness ($n = 46$, ●——●).

(36%) (30% of the women, and 50% of the men) became permanent admissions, of which they constituted 53%. For the 46 new referrals with depressive illness, seven (15%) became permanent admissions, of which they constituted 18%. The main problems which led to permanent admission were distributed, in percentages, as follows: physically ill/weak, 37; aggressive behaviour, 17; agitated, restless, interfering, 13; uncooperative, 13; wandering, 10; socially unacceptable behaviour, 5; subjective suffering, 5.

Of the permanent admissions, 78% occurred within one year, and 38% (15 referrals) within one month, of referral. Of these 15, 11 died within six months and nine within one month of admission. Of all the permanent admissions, 63% were dead within two years of admission, 58% within the first six months. Four referrals (three women, one man) were still alive five years after admission, all with Alzheimer's dementia; their mean age at referral was 78.8 years; the mean interval from referral to permanent admission was 5.5 months; the interval from permanent admission to death was, for the man, between seven and eight years, for two women between five and six, and for one woman, 12 and 13 years.

Examination of the high mortality rate within six months of admission revealed that there were 23 subjects (10 women, 13 men) with a mean age at admission of 76.3 years (women 77.3, men 75.5 years). For 13 subjects the main problem which led to permanent admission was 'physically ill/weak'. Among the other ten, eight had significant physical illness, one, a man aged 74, wandered away and was killed in a road traffic accident, and one, a woman aged 65, committed suicide. The mean age of these ten at admission was 80 years (range 65–93). Out of the 40 permanent admissions, these 23 were distributed according to their diagnostic categories as follows: Alzheimer's dementia, eight out of 21; depressive illness, five out of seven; chronic schizophrenia, three out of three; confusional states, two out of two; personality disorder, two out of two; arteriosclerotic dementia, one out of two; other dementia, one out of two; cerebral tumour, one out of one.

### Severity of illness and treatment

For Alzheimer's dementia at two years, for the 12 severe cases, 67% were alive and 33% were rated as 'same', and for the 21 mild cases, 48% were alive and 14% were rated as 'same'; in both categories 33% were rated as 'worse'. The mean age of the severe cases was 3.4 years less than that of the mild ones.

For depressive illness at two and five years, the seven mild cases showed the best prognosis: 71% and 57% respectively were 'improved'. At ten years, mild cases showed 29%, and the eight severe cases 25% 'improved'. At 15 years, mild cases showed 14% and severe cases 13% 'improved'. The mean age at referral of the three survivors was 67.3 years.

Of the 20 depressive patients who received electroconvulsive therapy (ECT), at two years, 60% were 'improved' and 20% dead, against 46% 'improved' and 46% dead for those who did not receive ECT; and at 5, 10, and 15 years, ECT cases continued to show a better prognosis than the others.

TABLE II

*Outcome at 2, 5, 10, and 15 years for patients with Alzheimer's dementia (n = 59) and depressive illness (n = 46) compared: death rate and state of survivors*

| *Follow-up period: years* | *Dead* | | *Survivors* | |
|---|---|---|---|---|
| | | *Improved* | *Same* | *Worse* |
| Alzheimer's dementia | | | | |
| 2 | 53 | 3 | 20 | 24 |
| 5 | 81 | 2 | 3 | 14 |
| 10 | 98 | 0 | 0 | 2 |
| 15 | 100 | 0 | 0 | 0 |
| Depressive illness | | | | |
| 2 | 35 | 52 | 4 | 9 |
| 5 | 57 | 39 | 2 | 2 |
| 10 | 78 | 20 | 0 | 2 |
| 15 | 93 | 7 | 0 | 0 |

For referrals with depressive illness, 16 (35%) died within two years of referral (ten woman, six men). The type of depression was physiological in seven and psychological in nine. Their mean age was 78.3 years, 3.2 years older than that for all referrals with depressive illness. Of these 16, 15 were, at the time of referral, suffering from physical illness which bore a direct relationship to the cause of death, and this illness was of a considerable degree, or they were very old, or both factors operated; the 16th committed suicide.

### New referrals and Oxfordshire population compared

Between 1973 and 1983, the mortality rate, among those aged over 65, was, for the 54 500 Oxfordshire population, 27 300 (50.1%), for the 146 new referrals, 133 (91.1%), and for the 57 with Alzheimer's dementia and the 45 with depressive illness, 56 (98%) and 35 (78%) respectively. But, in 1973, the proportion of this age group who were over the age of 75 was, for the Oxfordshire population, 36.5%, and for the new referrals 67.1% (for Alzheimer's dementia 88%, and for depressive illness 49%). Among those aged over 75, the mortality rate was: Oxfordshire population, 73.4%, Alzheimer's dementia, 98%, and depressive illness, 86% – the difference had been halved.

### Cause and place of death

At the 15-year point, 148 of the new referrals had died (97 women, 51 men). The commonest causes of death fell into four groups and, expressed in percentages, together with a fifth group of 'other causes', were as follows: chest infection 50.7 (women 50, men 53); cardiovascular disease 14.9 (women 16, men 14); cerebrovascular disease 13.5 (women 14, men 12); carcinoma 6.8 (women 7, men 6); other causes 14.1 (women 13, man 15). These were also the commonest causes of death in Alzheimer's dementia with 59 deaths, and depressive illness, with 43 deaths. For the disorders, respectively, the causes, in percentages, were: chest infection, 66 and 35; cardiovascular disease, 10 and 26; cerebrovascular disease, 8 and 14; carcinoma, 2 and 9; other causes, 14 and 16. The mean age, at the time of death, for all these new referrals was 80.2 years (range 48–95, women 81.0, men 78.5).

Among the new referrals who were aged 65 or over at the time of referral, the mean age at death was, for Alzheimer's dementia, with 57 deaths, 82.7 years, and for depressive illness, with 42 deaths, 80.9 years. The mean age difference between Alzheimer's dementia and depressive illness was, at referral, 4.7, and at death, 1.8 years.

The place of death for the 148 new referrals, in percentages, was as follows: psychiatric hospital, 23.6; other hospital, 39.2; residential home, 23.0; own home 10.8; other place 3.4. Of the seven referrals with depressive illness who died at home, six (three women, three men) died of cardiovascular disease, each lived alone, and in all six instances the coroner was informed, with resulting post-mortem examination.

### Survivors

Of the 14 survivors at ten years, ten were women and four were men. At the time of referral, in 1973, they were all aged over 65, except for a 57-year-old man with dementia related to alcohol consumption, and their mean age at that time was 5.7 years less than that of all the new referrals. Of the ten survivors suffering from depressive illness, nine were rated as 'improved', and one, a woman, was rated as 'worse'–she suffered from recurrent episodes of manic depressive psychosis, was aged 93 in 1983, and at two and five years had been rated as 'improved'. The only other survivor rated as 'worse' was the sole survivor with Alzheimer's dementia, a woman. Of the two survivors rated as 'same', one was the man with dementia related to alcohol, the other was a woman with a personality disorder. The ten rated as 'improved' included, in addition to the nine with depressive illness, a woman who developed a paraphrenic illness in 1973; they had all been similarly rated at two and five years.

Among the five survivors at 15 years, the man with dementia related to alcohol continued to be rated as 'same'. The other four continued to be rated as 'improved'; they included two women and one man, all of whom suffered from depressive illness, and the woman with a paraphrenic illness.

## Discussion

It is salutary to reflect that, among people aged over 65, the 146 new referrals represented a mere 0.27% of the population at risk. If, in addition, four times this proportion had been seen by the general psychiatrists in Oxford, the total would still have been only 1%. The mean annual referral rate to the Isis Unit consultant rose from 134.6 for the years 1973–80 to 188.4 for 1981–87, in spite of the increase from one to three teams. The predicted rise in the number of very old people was having an effect – the mean ages of new referrals, aged over 65, for 1973, 1980, and 1987, respectively, were 77.4, 77.7, and 78.8 years. In 1973, the percentage of the population at risk which was referred rose in the higher age groups and doubled for those aged over 80. This trend recurred in subsequent years, with implications for resources. According to Ineichen (1987), recent research suggests prevalence rates for dementia of 1% for the population aged 65–74 and 10% for that aged over 75. It is evident that the majority of old people suffering from psychiatric illness in Oxfordshire, and even of those with senile dementia, are managed without recourse to the psychiatric services. This finding accords with that of Kay *et al* (1964).

It is, perhaps, surprising that arteriosclerotic dementia comprised only 4.6% of all the referrals; the reason appeared to be that other manifestations of arteriosclerosis led to referral to physicians. Also, 9.8% may appear high for personality disorders, and one explanation is that these old people are able to manage as long as they are independent, but when they become dependent on others, for instance, through illness or the need for residential care, difficulties can arise – in each case the problem was one of behaviour impinging on others. Alzheimer's dementia also presented with a high proportion of behaviour which impinged on others (83%), and an improved understanding and management of such behaviour would be of great benefit. Another study showed that in 80% of the consecutive new referrals from local authority residential homes, a behavioural problem led to referral; subjective suffering accounted for only 6% (Margo *et al*, 1980). The prevalence of subjective suffering merits investigation.

Changes of residence were most frequent during the first two years, and were least frequent among those referrals who were rated as 'improved', and these, if they moved, tended to go into residential homes. Such changes were most frequent among those who were rated as 'worse', and these changes might be to residential homes or to the psychiatric or general hospitals. The great majority of new referrals were never permanently admitted to the Isis Unit. A surprisingly high number of those who did become permanent admissions, 78%, did so within a year of referral, and 58% of all permanent admissions died within six months of admission. The analysis reveals understandable reasons for this: in 1973, referrals might be admitted even though they were physically as well as psychiatrically ill; present policy is to treat such patients under the care of the geriatricians with psychiatric consultation.

Over half the permanent admissions were suffering from Alzheimer's dementia and, of these, 62% were alive two years after admission and 19% even after five years. Clearly, adequate long-term provision must be made for this group, which will expand with the predicted increase in those aged over 80. This concern is also expressed in studies that have shown that the prognosis of hospital admissions with dementia has improved since the 1950s (Christie, 1982; Blessed & Wilson, 1982). Indeed, Ineichen (1987) calculated that, in spite of the fact that the prevalence of dementia may be lower than is generally realised, there will be an increase in the number of cases of dementia of 17.2% between 1983 and 2001, because of the changing age structure of the elderly population.

For the new referrals with Alzheimer's dementia, there is some suggestion that the two-year prognosis is not necessarily worse for severe cases than for mild ones, but that the comparative youthfulness of the old person plays a part. It is interesting that 20% of referrals with this disorder were rated as 'same' two years after referral; two were even rated as 'improved'.

For depressive illness, neither the severity of the disorder, nor the need for ECT, necessarily worsened the long-term prognosis. The relatively high mortality rate of 35% at two years was adequately explained by physical illness, or great age, or both.

Although the mortality rate over ten years was, for Alzheimer's dementia, twice, and for depressive illness, one and a half times that of the Oxfordshire population, this disparity was accounted for to some extent by the greater age of the new referrals. In particular, depressive illness, after the high mortality rate in the first two years, does not, at ten years, appear to have shortened life expectation to the extent that might have been anticipated. Murphy (1983) found that, at one year, depressive illness in old age carried a rather dismal prognosis, which was worsened by physical illness and the severity of the depression. However, Baldwin & Jolley (1986) found a "dramatically better" outcome. The present study, although not strictly comparable, suggests that in the longer term, the prognosis for depressive illness is reasonably favourable, and that larger long-term studies are needed (*Lancet*, 1986).

Overall, patients referred with depressive illness were younger than those with Alzheimer's dementia. For women depression had to some extent been replaced by dementia between the ages of 65–75 and 75–85; this perhaps hints at some relationship between depressive illness and dementia. Roth (1955) demonstrated a distinction between the two disorders in a study of their natural history, but speculation continues (Mahendra, 1985). In the present study in no instance of depressive illness did dementia develop.

Death in depressive illness appears to be a more vigorous process than in Alzheimer's dementia, with chest infection much less in evidence, and over twice the proportion of cardiovascular and cerebrovascular disease, more carcinomas, and one suicide. Among the new referrals who were aged 65 or over at the time of referral, the mean age for depressive illness at the time of death approached that for Alzheimer's dementia, and a mean age difference of 4.7 years at referral was narrowed to one of 1.8 years at death. Although candidates for Alzheimer's dementia may be regarded as the survivors, sufferers from depressive illness are not so far behind. The only case of Alzheimer's dementia in which carcinoma caused death was a man with pre-senile dementia. The seven referrals with arteriosclerotic dementia, none aged under 65, tended to die younger, with a mean age of 77.6 years at death.

sample is representative of
s in the circumstances described,
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volved many old people who were
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vho were referred, their inclusion
oved the prognosis within the
ies.

ed for this study on the following
response was 100%. This was
latively stable population in the
ment area, and by the ready co-
es and friends, of the professional
neral practitioners. (b) It is based
ecutive referrals to one consultant.
bles were reduced by his personal
cording of all the cases. (d) The
lly analysed until the clinical study
s reducing the effect of bias. (e)
Comparison of the original and final diagnoses showed a high degree of agreement. (f) In 43 cases the findings of post-mortem examination were consulted. (g) It is a prospective study.

This study of their natural history serves to reinforce the distinction, demonstrated by Roth (1955), between depressive illness and senile dementia. Furthermore, this distinction may be observed in the different profiles of the causes of death in these two disorders. These different profiles may, in part, be explained by the concept that people who are going to develop Alzheimer's dementia have lived through other causes of death, to die of bronchopneumonia at a great age; but this is hardly the whole explanation, since the mean age difference at the time of death for the two disorders was only 1.8 years. What other factor might explain these different profiles? Larger comparative studies would be of interest.

The greatest challenge facing the psychiatry of old age is undoubtedly that posed by Alzheimer's dementia and its concomitant behavioural problems. Basic research into its aetiology should be vigorously pursued (Harrison, 1986). Further research into the presenting behavioural problems might facilitate the management, but in the meantime, adequate provision must be made for the long-term care of patients with Alzheimer's dementia. This disorder is the main threat to the viability of the service.

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# Cerebral Vascular Transit Time in Alzheimer's Disease and Korsakoff's Psychosis and its Relation to Cognitive Function

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The cerebral vascular transit time of 17 patients with pre-senile dementia of the Alzheimer type (ATD), nine abstinent patients with alcoholic Korsakoff's psychosis (KOR), and ten age-matched controls was determined by the bolus intravenous injection of pertechnetate. A gamma camera was used to estimate the median transit time (MTT) of the radioactive bolus in a planar (non-tomographic) projection normal to the vertex. The spread of the bolus arriving at the aortic arch was measured independently by a single external detector over the chest, and correction made for the transit time of this input function in calculating the net MTT for the head. Both ATD and KOR groups showed lengthened net MTTs, compatible with reduced cerebral blood flow, and which were correlated with reduced cognitive function. It is concluded that the method employed gives a simple, inexpensive estimate of function-related blood flow to the brain in pre-senile dementia.

Under most circumstances cerebral blood flow (CBF), perfusion, and metabolism, as evidenced by oxygen consumption and glucose intake, are closely linked (Roy & Sherrington, 1890; Frackowiack *et al*, 1981). Therefore, a measurement of cerebral perfusion may be used as an index of metabolism, which is itself related to functional activity, even to thinking (Roland *et al*, 1987). Earlier evidence of an association between cerebral metabolism, perfusion, and cognitive defects in dementia was presented by Gustafson & Risberg (1974), and was based on the estimated CBF by intracarotid injection of xenon-133. They concluded that there was an approximate relationship between the cognitive reduction and the decrease in hemispheric perfusion, especially in grey matter. Regional abnormalities of perfusion were associated with specific cognitive functions, in the same way as were focal brain lesions.

However, the intracarotid injection method was of limited clinical applicability, especially in routine diagnosis and follow-up of patients suffering from dementia. Intravenous (Lassen & Ingvar, 1972) or inhalational techniques (Mallett & Veall, 1963) for the administration of the inert gas were more acceptable, and have been used in dementia (Ingvar, 1982), but these approaches still require the head to be kept immobile for up to 15 minutes, which can present difficulties. Positron emission tomography has been shown to provide high-quality, regional, three-dimensional CBF measurements, but it is available in only a few centres. There remains a continuing need for simple and cheap methods for estimating cerebral perfusion in dementia and other brain diseases.

The aims of the present study were twofold: firstly, to assess the utility of a relatively simple and rapid method of measuring cerebral perfusion, using transit time of pertechnetate, in demented patients, and secondly to investigate the association between transit time and cognitive impairment. Transit time methods were originally developed by cardiologists to measure cardiac output (Thompson *et al*, 1964) but can, in principle, be applied to any determination of tracer dynamics (Davenport, 1983; Merrick, 1984).

## Method

### Patients and controls

None of the patients or controls had taken psychotropic medication for at least six months before the study. Informed consent was obtained in each case, and where there was doubt about a patient's understanding, the agreement of a close relative or independent nurse was sought before the patient was included. The study was approved by the Ethics of Medical Research Sub-Committee for Psychiatry and Psychology of the Royal Edinburgh Hospital and ARSAC. Groups were matched for age.

#### *Alzheimer-type dementia (ATD)*

Seventeen patients with pre-senile ATD were studied (three men, 14 women, aged 52–66 years, mean 59 years). All met criteria for probable Alzheimer's disease (McKhann *et al*, 1984). Briefly, these include:

(a) onset of symptoms before the age of 65, with dysmnesia as the initial feature
(b) steadily progressing dementia
(c) absence of a history suggestive of another type of dementia

(d) absence of focal neurological signs and hypertension
(e) computerised tomography scan normal or showing only cerebral atrophy and no additional pathology
(f) EEG showing no focal abnormalities
(g) normal haematological, biochemical, and clinical investigations of cerebrospinal fluid
(h) normal ECG.

### *Alcoholic Korsakoff syndrome (KOR)*

Nine patients with KOR were studied (six men, three women, aged 58–73 years, mean 62 years). All subjects except one were resident in a psychiatric hospital and met the following diagnostic criteria:

(a) definite history of prolonged alcohol abuse, usually in excess of 20 years
(b) severe anterograde memory deficit
(c) no history suggestive of progressive dementia
(d) definite history of past episodes of either acute confusion or Wernicke's encephalopathy (with or without peripheral neuropathy)
(e) EEG showing no focal activity
(f) normal haematological and biochemical tests
(g) no alcoholic beverage taken for at least six months.

### *Controls*

Ten control subjects (one man, nine women, aged 50–76 years, mean 61 years) were recruited from local voluntary groups, and one was a patient's spouse. All volunteers were in good physical and psychiatric health.

## CAMCOG

The Cambridge Mental Disorders of the Elderly Examination (CAMDEX) was developed for diagnosis and measurement of dementia (Roth *et al*, 1986). The CAMDEX includes a section for assessment of cognitive function (CAMCOG), which consists of 14 of the 19 Mini Mental State Examination (MMSE) items (Folstein *et al*, 1975) plus 43 items covering additional aspects of cognitive function. The CAMCOG subscores used in this study were: orientation, language (which includes motor and verbal comprehension, expression, reading, and writing), total memory (comprising remote, recent, recognition, and recall), attention, and praxis. Total CAMCOG score (CAMTOTAL) was used as a global measure of cognitive function.

## Measurement of cerebral blood flow

Almost a century ago, Stewart (1894) pointed out that the blood flow to any organ could be calculated if the volume of blood within it and the mean (more correctly median) transit time of a tracer through it could be measured. Formal proof of this relationship was provided by Zierler (1962).

The vascular median transit time (MTT) is the volume of blood in the organ under investigation divided by the rate of blood flow through it. The ratio blood flow:blood volume (1/MTT) is also known as the perfusion reserve (Gibbs *et al*, 1984), and is the most sensitive indicator of the extent to which cerebral perfusion is being maintained by reflex vasodilatation. It has been shown that transit times longer than 10 seconds indicate impending failure of the normal compensatory mechanisms (Powers *et al*, 1984).

The first passage of radioactivity (i.e. without recirculation) through a blood vessel can be described by a gamma-variate function of the form:

$$C(t) = k(t - T)^{\alpha} e^{-(t-T)/\beta}$$

where $C(t)$ is the tracer concentration (e.g. in counts/min) at time $t$ after injection, $T$ is appearance time (i.e. the time at which counts are first detected over the region of interest), and $k$, $\alpha$, and $\beta$ are constants. The MTT of the activity at any particular detection point can be estimated using $\text{MTT} = \beta(\alpha + 1)$ (Thompson *et al*, 1964; Davenport, 1983).

Measurements of MTT for cortical blood flow in resting conditions were undertaken in the Department of Nuclear Medicine, Western General Hospital, Edinburgh. The patient was asked to lie supine on a high couch; an 18-gauge Venflon cannula was inserted into the right antecubital vein and used for injection of the radionuclide tracer. The patient's head was placed in a standard position such that the face of the gamma camera was parallel to the plane between the outer canthus of the eye and the external auditory meatus. Data collection was initiated when 700 MBq activity of sodium pertechnetate ($^{99m}$Tc) was injected rapidly using the cannula, and the first pass of the activity through the brain was recorded.

To measure and correct for dispersion of the bolus reaching the head, a scintillation detector (20 mm diameter) was positioned over the angle of Louis, pointing towards the base of the heart, and the passage of activity measured below the probe. Data were collected using a BBC microcomputer, and displayed as count rate versus time. By fitting a gamma-variate function to the aortic activity curve, the MTT of what is defined as the input function (IF) was determined.

The MTT data for estimation of blood flow in the cortex was collected using a high-sensitivity collimator. In order to improve the count density and to produce a manageable number of frames for processing, the total first-pass curve is identified, and frames summed to produce a 20-frame condensed view of the first pass. This condensed view is then corrected for dead-time losses, smoothed, and analysed to find the MTT of the curve for each brain pixel. By subtracting the MTT of the IF from each brain-pixel MTT, we can derive net MTT (Davenport, 1983; Merrick, 1984), which can be used to construct a functional cortical image.

The data from this image can be examined as net MTT for right (RCx) and left (LCx) sides of the midline, or by subdividing each side of the image into four equal regions of interest, A, B, C and D (Fig. 1). We assumed that areas B and C will reflect activity in underlying central and parietal cortex, while A and D will reflect more frontal and occipital activity, respectively. However, a planar system of this sort does not allow precise identification of anatomical regions. In this study, regions of interest A, B and C are emphasised, as the posterior region (D) may be contaminated

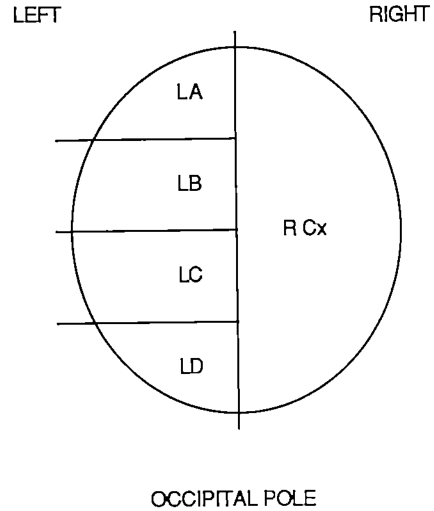

FIG. 1 Diagram showing the position of regions of interest in relation to the cortical image.

by neck blood flow. All data processing was performed by an investigator blind to diagnosis.

### Statistical analysis

Kruskal–Wallis one-way analysis of variance was used to test the differences in blood flow and the differences in psychological parameters between the three groups, and *post hoc* Mann–Whitney *U*-tests were used to locate significant differences. The relationship between MTT parameters and cognitive scores was examined using Spearman's rank correlation coefficients, with a significance level of $P<0.01$ to take account of multiple comparisons.

## Results

### Net median transit times

The MTT of the input bolus (IF) of radioactivity, which is principally a function of cardiac output, was similar in all three groups (Table I). All the patients and controls had comparable cardiac function; thus a similar profile of radionuclide is presented to the cerebral circulation in each group, at the level of the aorta.

The distribution of net MTT over either hemisphere (LCx and RCx) between groups showed striking differences (Table I). Both ATD and KOR patients showed net MTTs that were prolonged by about 50%. Thus, flow through cortical areas appeared to be appreciably slowed in both patient groups (Fig. 2).

### CAMCOG psychological scores

Orientation and memory score were impaired in both ATD and KOR patients compared with control subjects (Table II). Language function was also reduced in ATD patients compared with controls; KOR patients were less impaired. Scores for praxis were clearly reduced in ATD patients but not in KOR patients. Overall cognitive function, as measured by CAMTOTAL or MMSE, was lowest in the ATD group compared with controls, but also significantly reduced in KOR patients.

The correlation matrix of blood flow measures and cognitive function scores is shown in Table III. For the ATD

TABLE I

*Net median transit time (in seconds) in cortical regions of interest (left and right Cx, A, B, C and D), and input function for control, Alzheimer and Korsakoff groups*

| | *Control* | | *ATD* | | *Korsakoff's* | | *Kruskal–Wallis one-way ANOVA* |
|---|---|---|---|---|---|---|---|
| | *Median* | *Range* | *Median (% increase of control)* | *Range* | *Median (% increase of control)* | *Range* | |
| Left Cx | 4.6 | 3.1–6.1 | 6.9(+50)*** | 5.7–14.2 | 7.1(+54)* | 4.4–11.3 | <0.0005 |
| Right Cx | 4.6 | 2.9–5.7 | 6.6(+43)*** | 5.3–14.0 | 6.9(+50)* | 4.6–11.2 | <0.0005 |
| Left A | 4.2 | 2.6–6.5 | 6.2(+48)** | 3.7–14.9 | 6.0(+43)* | 4.1–12.0 | <0.005 |
| Right A | 4.2 | 2.2–6.0 | 6.5(+55)** | 3.5–14.6 | 6.3(+50)* | 3.6–10.7 | <0.005 |
| Left B | 4.0 | 2.4–5.0 | 5.8(+45)** | 3.9–13.3 | 6.0(+50)* | 3.9–10.4 | <0.001 |
| Right B | 4.1 | 2.3–5.1 | 5.5(+34)* | 3.7–13.2 | 5.7(+40)* | 3.5– 9.3 | <0.005 |
| Left C | 4.4 | 2.8–5.9 | 6.8(+55)*** | 5.1–15.8 | 6.6(+50)* | 4.6–10.9 | <0.0005 |
| Right C | 4.5 | 2.7–5.5 | 6.9(+53)*** | 5.7–14.6 | 6.0(+33)* | 4.6–10.7 | <0.0005 |
| Left D | 5.4 | 3.3–7.8 | 8.7(+61)*** | 6.5–16.6 | 8.4(+56)* | 4.9–12.1 | <0.0005 |
| Right D | 5.4 | 3.8–7.1 | 8.7(+61)*** | 6.8–17.5 | 8.6(+59)* | 5.8–14.3 | <0.0005 |
| IF | 6.3 | 3.6–8.5 | 6.5(+3) | 5.2– 9.1 | 7.7(+22) | 5.7–11.4 | NS |

All *post-hoc* comparisons were made between patient groups and controls using Mann–Whitney *U*-tests: $^{*}P<0.005$; $^{**}P<0.001$; $^{***}P<0.0001$.

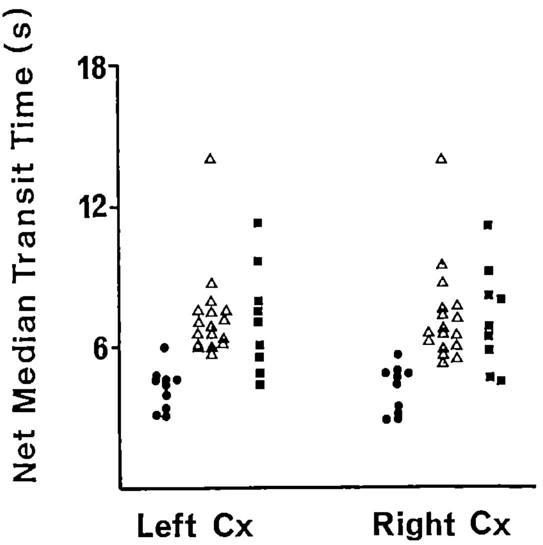

FIG. 2 Net MTT for right and left sides of cortical image for control subjects (●), Alzheimer (▲), and Korsakoff (■) patients.

group, negative association at the $P < 0.01$ level was detected only between orientation scores and right frontal cortex, although there is clearly a strong overall trend for low cognitive scores to be associated with prolonged net MTT. This relationship is most apparent between hemispheric net MTT (LCx and RCx) and CAMTOTAL, orientation, language, and, to a lesser extent, memory function. However, all areas tend to show some level of association between impaired function and prolonged net MTT. It is striking that no association is seen between cognitive function scores and the IF.

The association between net MTT and psychological measures in KOR patients is also shown in Table III. It is evident from Table III that language and praxis scores show an appreciable 'ceiling' effect when compared with ATD patients, and no association with net MTT for these variables emerges in Table III. Memory and orientation scores tend, as for ATD patients, to show a negative association with net MTT. The only contradictory finding was of a strong positive association between attention and net MTT in KOR patients.

## Discussion

The prolongation of net MTTs in ATD and KOR patients compared with control subjects is likely

TABLE II

*CAMCOG subscores, MMSE and total CAMCOG score for control, ATD and KOR subjects*

| | *Controls* (n = *10)* | *ATD* (n = *17)* | *KOR* (n = *9)* | *Kruskal–Wallis one-way ANOVA* |
|---|---|---|---|---|
| Orientation | 10 (10) | 4 (0–9)** | 5 (1–9)** | <0.0005 |
| Language | 29 (28–30) | 20 (0–27)** | 26 (23–29)* | <0.0005 |
| Memory | 24 (23–26) | 7 (0–15)** | 12 (4–24)** | <0.0005 |
| Attention | 7 (5–7) | 1 (0–3)** | 5 (3–7) | <0.0005 |
| Praxis | 12 (12) | 7 (0–11)** | 11 (7–12) | <0.0005 |
| CAMTOTAL | 102 (100–105) | 51 (0–82)** | 75 (56–99)* | <0.0005 |
| MMSE | 30 (29–30) | 12 (0–24)** | 20 (11–29)* | <0.0005 |

Results expressed as median and range. All *post-hoc* comparisons were made between patient groups and control subjects using Mann–Whitney *U*-tests; $^*P < 0.005$; $^{**}P < 0.001$.

TABLE III

*Relationship between net transit times for different cortical regions and CAMCOG scores in ATD and KOR patients*

| | *LCx* | *RCx* | *LA* | *RA* | *LB* | *RB* | *LC* | *RC* | *LD* | *RD* | *IF* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ATD patients | | | | | | | | | | | |
| CAMTOTAL | −0.33 | −0.60 | −0.33 | −0.57 | −0.11 | −0.46 | −0.32 | −0.42 | −0.47 | −0.46 | −0.01 |
| Orientation | −0.38 | −0.68* | −0.48 | −0.68* | −0.14 | −0.57 | −0.33 | −0.58 | −0.51 | −0.56 | −0.04 |
| Language | −0.53 | −0.66 | −0.63 | −0.54 | −0.43 | −0.57 | −0.45 | −0.25 | −0.35 | −0.38 | +0.08 |
| Memory | −0.38 | −0.58 | −0.35 | −0.41 | −0.18 | −0.35 | −0.21 | −0.23 | −0.35 | −0.48 | +0.16 |
| Attention | +0.04 | −0.18 | −0.27 | −0.26 | −0.08 | −0.18 | −0.02 | −0.16 | −0.19 | −0.10 | +0.09 |
| Praxis | −0.15 | −0.36 | −0.34 | −0.38 | −0.06 | −0.28 | −0.12 | −0.22 | −0.34 | −0.30 | −0.007 |
| KOR patients | | | | | | | | | | | |
| CAMTOTAL | +0.07 | +0.07 | +0.07 | +0.17 | +0.07 | +0.07 | +0.06 | +0.02 | +0.02 | +0.07 | −0.07 |
| Orientation | −0.44 | −0.44 | −0.44 | −0.39 | −0.44 | −0.44 | −0.47 | −0.38 | −0.50 | −0.44 | −0.90* |
| Language | +0.10 | −0.09 | −0.10 | −0.22 | +0.09 | −0.10 | −0.08 | +0.02 | −0.01 | +0.10 | +0.02 |
| Memory | −0.31 | −0.31 | −0.31 | −0.15 | −0.31 | −0.31 | −0.32 | −0.32 | −0.33 | −0.31 | +0.02 |
| Attention | +0.82* | +0.82* | +0.82* | +0.67 | +0.82* | +0.82* | +0.84* | +0.78 | +0.75 | +0.82 | +0.49 |
| Praxis | +0.05 | +0.05 | +0.05 | +0.17 | +0.05 | +0.05 | −0.04 | +0.05 | +0.09 | +0.05 | +0.05 |

Spearman's rank correlation coefficients: $^*P < 0.01$.

to reflect reduced cortical blood flow, as measured by other techniques. Lengthening of MTT may reflect reduced flow through a constant cerebral blood volume or normal flow through an increased cerebral blood volume, or some intermediate situation. There are no independent estimates of cerebral blood volume in dementia that suggest it is increased, and hence a reduced CBF is the most likely cause of lengthened net MTT. In Alzheimer's disease, CBF appears to be a reliable indicator of brain metabolism (Frackowiak *et al*, 1981), and measurement of net MTT may thus provide a simple method of estimating brain metabolism in dementia.

Positron emission tomography (PET) permits direct investigation of brain metabolism *in vivo*. Relative decreases in cortical glucose metabolism (de Leon *et al*, 1983; Kuhl *et al*, 1985), cerebral oxygen utilisation, and CBF (Frackowiack *et al*, 1981) have been demonstrated in ATD. Such impairment of cerebral metabolism was seen in all areas, but most clearly in temporoparietal and frontal regions, with a decrease in CBF of 25–40% in severely demented patients (Frackowiack *et al*, 1981). These findings are consistent with the results of this study, where net MTT was prolonged symmetrically in both hemispheres in patients with moderate to severe ATD. The differentiation from control subjects was very clear. In part this will have been because the mean age of the ATD group was 59, and there is evidence that neuropathological and neurochemical abnormalities are more marked and widespread throughout the cortex in younger ATD patients compared with older subjects (Roth, 1986).

In KOR patients, MTTs were prolonged compared with controls, and similar to those of ATD patients, suggesting that KOR patients who are abstinent from alcohol have reduced CBF and also perhaps metabolism in the centroparietal cortex. There are many studies that have described reduced CBF in chronic alcoholism, but they have usually emphasised recovery of CBF on treatment with thiamine and following abstinence (e.g. Hata *et al*, 1987). Thus, the finding of reduced cerebral perfusion in stable abstinent subjects is somewhat unexpected, as KOR patients have a relatively localised macroscopic neuropathological lesion in the diencephalon or hippocampal formation, and a discrete impairment of memory without necessarily more global impairment of cognitive function (Victor *et al*, 1971; Blackburn & Tyrer, 1985). Correspondingly, our neuropsychological data clearly separated the KOR patients from the more globally impaired ATD group, especially with respect to language, attention, praxis, and total score.

However, there is evidence that the dysfunction in Korsakoff's psychosis is more extensive than neuropathological and clinical findings might suggest; magnetic resonance imaging studies have demonstrated that a significant proportion of KOR patients who do not appear to have a generalised alcoholic dementia have high proton spin-lattice relaxation times ($T_1$ values) for both frontal and parietal white matter (Christie *et al*, 1988). This finding suggests increased tissue water and/or cellular water binding. Furthermore, Hata *et al* (1987) have shown that KOR patients have a widespread reduction in regional CBF throughout cortical and subcortical structures. Using xenon-133 contrast CT, they have demonstrated reduced regional CBF in hippocampus, nucleus basalis of Meynert, and frontal white matter, as well as throughout cortical grey matter. Other techniques have shown similar abnormalities in KOR patients, including reduced mean hemispheric grey matter CBF using xenon-133 inhalation (Rogers *et al*, 1983), and reduced whole-brain CBF, and reduced cerebral metabolic rates for oxygen and glucose (Kruger *et al*, 1980) using the Kety–Schmidt technique.

Lishman (1986) has suggested a unifying hypothesis to account for the symptoms common to ATD and KOR patients. He suggests that in Korsakoff's psychosis, alcohol exerts toxic effects on the basal forebrain nuclei, causing damage to cholinergic projections to cortex, with resultant cognitive impairment. Such a pathological process might result in a diffuse and variable reduction in cortical metabolism and blood flow, as found in the present study and that of Hata *et al* (1987). However, we could not rule out the possibility that cerebral perfusion is maintained in the patients by persistent vasodilatation, so that they are functioning permanently close to the limits of their reserve capacity.

Neuropathological studies of patients with moderate to severe pre-senile ATD show that the temporal, frontal, and parietal lobes are all directly affected by neurofibrillary tangles, plaques, and neuronal degeneration (Pearson *et al*, 1985). This predicts both global intellectual impairment and widespread effects on cerebral metabolism. In ATD patients there was a marked and consistent trend for cognitive scores to be inversely associated with net MTT, as would be expected if net MTT gives a valid reflection of cerebral function. This association might have been even more convincing but for prominent 'floor' effects in the neuropsychological tests that were used (see Table II). On the other hand, the reduced level of association between MTT and cognitive function in KOR patients in part reflects their greater preservation of language and praxis, and corresponding 'ceiling' effects. The paradoxical finding of an increased level of attention in association with impaired flow in KOR patients will require replication before speculation is justified. Overall, the persistent pattern of negative correlation between test scores and net MTT in both patient groups supports the proposition that net MTT gives a meaningful estimate of functional cortical activity in dementia.

Non-tomographic methods of CBF measurement, such as the nitrous oxide method for measuring hemispheric blood flow (Kety & Schmidt, 1945), estimate flow as a function of an ill-defined volume of distribution said to be a function of brain volume, although there is ample evidence that this is an oversimplification. By contrast, any tomographic method, such as PET, because of inherent limitations of spacial resolution, measures blood flow or other metabolic parameters per unit volume of intracranial contents, including metabolically inactive CSF spaces. Thus, artefacts in tomographic measurements of CBF may be lower in dementia owing to brain atrophy. Such effects may be appreciable, and could represent a significant fraction of the apparent reduction in flow that is measured (Chawluk *et al*, 1987). There are advantages, accordingly, of a simple, direct approach to blood flow measurement, such as the net MTT method. Not only is the method rapid, non-invasive, and inexpensive, but in our experience is well tolerated by demented patients of varying degrees of severity, and could be employed widely using existing gamma-camera systems available in most departments of nuclear medicine.

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# The Effects of Nicotine on Attention, Information Processing, and Short-Term Memory in Patients with Dementia of the Alzheimer Type

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Nicotine in patients with dementia of the Alzheimer type (DAT) producted a significant and marked improvement in discriminative sensitivity and reaction times on a computerised test of attention and information processing. Nicotine also improved the ability of DAT patients to detect a flickering light in a critical flicker fusion test. These results suggest that nicotine may be acting on cortical mechanisms involved in visual perception and attention, and support the hypothesis that acetylcholine transmission modulates vigilance and discrimination. Nicotine may therefore be of some value in treating deficits in attention and information processing in DAT patients.

The cholinergic hypothesis of ageing and dementia attributes impairment of memory and cognition to reduced central cholinergic function (Drachman & Sahakian, 1979; Bartus *et al*, 1982; Sahakian, 1988). Critical evidence for this hypothesis is the finding that the degree of cognitive impairment in patients with dementia of the Alzheimer type (DAT) is positively correlated with a decrease of choline acetyltransferase, and a reduction in acetylcholine (ACh) synthesis in brain, measured in post-mortem and biopsy studies respectively (Perry *et al*, 1978; Francis *et al*, 1985). In addition, both muscarinic and nicotinic receptors in cerebral cortex are decreased in normal elderly subjects, and may be still further reduced in the brains of patients with DAT (White *et al*, 1977; Davies & Feisullin, 1981; Rinne *et al*, 1984; Flynn & Mash, 1985; Candy *et al*, 1986).

It may therefore be possible to improve partially the impairment in memory and cognitive function of DAT patients with a cholinergic receptor agonist, such as nicotine. Nicotine, in addition to its post-synaptic action, may also act pre-synaptically, since there is evidence for pre-synaptic nicotinic auto-receptors promoting ACh release (Rowell & Winkler, 1984; Clarke *et al*, 1986). The purpose of this study was to investigate whether nicotine could enhance performance on computerised tests of attention, information processing, and short-term memory in normal elderly subjects and patients with DAT.

## Method

There were three groups: 7 young normal adults (3 men, 4 women, mean age 27 (±8.63) years, 4 smokers); 7 elderly normal control subjects (6 men, 1 woman, mean age 70 (±5.26) years, 4 smokers); and 7 patients with DAT (3 men, 4 women, mean age 71 (±6.02) years, 3 smokers). The National Adult Reading Test (Nelson, 1982) was used to match the three groups for pre-morbid verbal IQ, with scores of 121, 120, and 119 respectively. The young adults were students and community volunteers, and the elderly controls were community volunteers and the spouses of patients. Patients had been assessed at the Maudsley Hospital Memory Clinic (Philpot & Levy, 1987), and diagnosed by a consultant psychiatrist in concordance with a second psychiatrist as having DAT following the criteria outlined for 'probable Alzheimer's disease' by McKhann *et al* (1985). All patients selected were considered to be in the mild or moderate stages of the disease, and fell in stages 1 or 2 of the Clinical Dementia Rating Scale (Hughes *et al*, 1982). Although the numbers may appear small, it should be emphasised that it is difficult to obtain early, well-diagnosed cases of DAT, and to match them so closely with controls.

Subjects and patients attended training sessions followed by seven test sessions in the following order: an undrugged baseline session, a placebo session (saline), three sessions with nicotine (0.4 mg, 0.6 mg, and 0.8 mg), a placebo session, and an undrugged baseline session. Data from the two baseline sessions and two placebo sessions were summed and the means calculated. Saline and nicotine were injected subcutaneously. During the 40-minute test sessions, the patients and subjects underwent a series of tests of cognitive function, including the two computerised tests, the digit span (forward) subtest of the Wechsler Adult Intelligence Scale (WAIS), the critical flicker fusion test (an indirect measure of cortical arousal) (Smith & Misiak, 1976), and the finger-tapping task (a test of motor speed) West & Jarvis, 1986).

The first of the two computerised tasks was primarily a test of attention and information processing, with a small working memory component, substantially modified and simplified from that of Wesnes & Warburton (1984). In the Wesnes and Warburton task, subjects were asked to detect all sequences of three consecutive odd or even digits. In our task, subjects were asked to detect only consecutive, ascending odd or even sequences of digits (i.e. 2, 4, 6; 3, 5, 7; 4, 6, 8; and 5, 7, 9). Digits were presented on the computer screen at the rate of 100 digits per minute and responses were registered by button press. The test took approximately seven minutes. The DAT patients were severely impaired on this task compared with normal subjects.

In order to titrate performance in the three groups to an approximately equivalent level, which however was not at ceiling and could show improvements, our computer task was individually graded in difficulty. This meant that generally normal young subjects were asked to detect all four sequences, normal elderly subjects were asked to detect between two and four sequences, and DAT patients were asked to detect only one sequence. Correct detections or hits ($h$) and false alarms ($f$) were recorded, and the sensitivity index $A'$ was calculated as follows (McNicol, 1972; Saghal, 1987*b*):

$$A' = 0.5 + [(h-f)+(h-f)^2] \; / \; [4h(1-f)]$$

The second computer task tested short-term memory. In its simplest form it was a modified version of the delayed response test used in experimental animals (Dunnett, 1985; Sahgal, 1987*a*). In our task, subjects first attended to, and registered by touching the touch-sensitive VDU screen, a sequence of stimuli which were 'yellow happy faces' presented in four adjacent boxes on the VDU. They then had to recall the sequence observed after a delay (0, 4, or 16 s) by again touching the touch-sensitive VDU in the correct location order.

The second computerised task, like the first, was individually graded in difficulty to titrate performance in the three groups to approximately equivalent levels. Thus the normal young and elderly subjects were generally shown sequences of six stimuli locations, and the DAT patients were shown sequences of between one and four stimuli locations. Any sequence recalled incorrectly on the first attempt was scored as a memory error, and these were summed over all time delays.

## Results

On the information processing test, there were significant group differences in the accuracy of detection or sensitivity index ($F(2, 18) = 5.72$; $P < 0.05$). The normal elderly group had a slightly lower sensitivity in both the baseline and placebo conditions as compared with the normal young adults. However, the DAT group was impaired when compared with both groups. Under nicotine, both the normal young group and the DAT group showed a dose-dependent improvement in sensitivity ($F(4, 72) = 2.99$; $P < 0.05$). As can be seen from Fig. 1, the effect was large in the DAT group; although this improvement in $A'$ is only of the order of 5%, it represents a substantial increase in the probability of a hit, and has to be evaluated against the very low variability inherent in the $A'$ measure (Table I). There were no consistent changes in response bias for the three groups. Reaction times in all conditions were found to be significantly longer in DAT patients, as compared with the normal young and old adults ($F(2, 18) = 6.66$; $P < 0.01$). Nicotine caused a significant and marked quickening of reaction times in DAT patients, and a slight one for normal young subjects ($F(4, 72) = 2.81$; $P < 0.05$). Therefore, nicotine appeared to affect response vigour as well as stimulus sensitivity in DAT patients. The invigorating effect on response was also seen from the rate of finger tapping ($F(2, 18) = 10.25$; $P < 0.001$), where there was a significant increase from placebo levels at the 0.8 mg dose of nicotine ($F(4, 72) = 4.46$; $P < 0.01$).

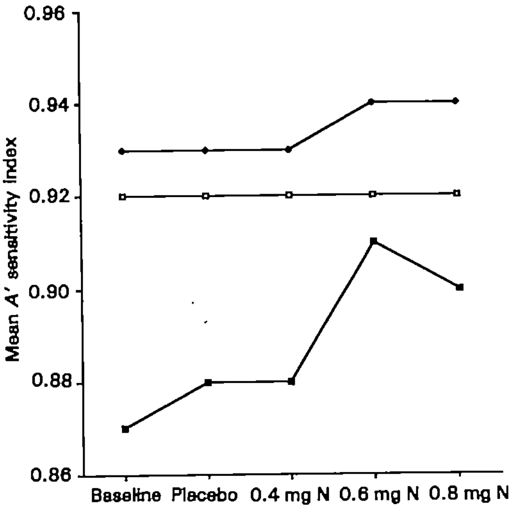

FIG. 1 The effect of nicotine (N) on discriminative sensitivity $A'$ in a computerised task of attention and information processing (○ – ○ normal young adults, □ – □ normal old adults, ■ – ■ patients with DAT).

DAT patients were significantly impaired on the short-term memory component of the second computer task, while normal young and old subjects performed well, even at the most difficult level of sequencing ($F(2, 18) = 23.72$; $P < 0.001$). Nicotine did not significantly alter the performance of any of the three groups.

The results of the two computer tasks suggest that nicotine exerts its effects on attention and information processing, rather than on mnemonic processes. This interpretation gains further support from the results of the final two tasks, digit span and critical flicker fusion. Digit span, traditionally regarded as an index of short-term memory capacity, was unaffected by nicotine. Critical flicker fusion, a test of temporal resolution in the visual system, is regarded as an indirect measure of cortical arousal (Smith & Misiak, 1976). Nicotine increased detection of a flashing or flickering light, as evidenced by the decreased difference between ascending and descending threshold values, especially in the DAT group ($F(4, 72) = 12.50$; $P < 0.001$) (Table I). Therefore, nicotine may be acting on cortical mechanisms involved in visual perception and attention.

## Discussion

Our results show that nicotine can improve attention and information processing in DAT patients, as well as in normal young adults, but does not affect performance on our tests of short-term memory.

TABLE I

*Test responses (means ± s.d.) in normal young and old adults and DAT patients when untreated or when treated with placebo or nicotine.*

| | | | *Nicotine* | | |
|---|---|---|---|---|---|
| | *Baseline* | *Placebo* | *0.4 mg* | *0.6 mg* | *0.8 mg* |
| *Young adult controls* | | | | | |
| Hit probability | 0.73 ± 0.15 | 0.75 ± 0.15 | 0.77 ± 0.17 | 0.77 ± 0.13 | 0.77 ± 0.15 |
| Sensitivity index | 0.93 ± 0.03 | 0.93 ± 0.03 | 0.93 ± 0.04 | 0.94 ± 0.03 | 0.94 ± 0.04 |
| Reaction times: ms | 407 ± 75 | 397 ± 95 | 407 ± 102 | 397 ± 76 | 412 ± 102 |
| Tapping rate: taps/min | 441.7 ± 53.0 | 443.5 ± 45.1 | 442.2 ± 53.0 | 456.9 ± 55.2 | 440.9 ± 54.4 |
| Memory errors | 7.50 ± 3.08 | 8.36 ± 1.07 | 8.57 ± 4.58 | 6.43 ± 4.04 | 9.71 ± 6.70 |
| Digit span | 7.1 ± 1.4 | 7.6 ± 1.7 | 8.0 ± 2.2 | 7.3 ± 1.3 | 7.7 ± 1.4 |
| Critical flicker fusion: Hz | 4.0 ± 2.0 | 3.9 ± 1.8 | 3.3 ± 1.0 | 2.7 ± 1.2 | 1.7 ± 0.9 |
| *Normal elderly controls* | | | | | |
| Hit probability | 0.70 ± 0.13 | 0.70 ± 0.17 | 0.69 ± 0.15 | 0.69 ± 0.11 | 0.69 ± 0.17 |
| Sensitivity index | 0.92 ± 0.02 | 0.92 ± 0.04 | 0.92 ± 0.04 | 0.92 ± 0.03 | 0.92 ± 0.05 |
| Reaction times: ms | 440 ± 37 | 435 ± 44 | 440 ± 64 | 439 ± 41 | 445 ± 54 |
| Tapping rate: taps/min | 371.3 ± 30.4 | 373.0 ± 37.0 | 375.3 ± 37.7 | 380.3 ± 33.7 | 382.8 ± 40.3 |
| Memory errors | 11.79 ± 8.39 | 8.64 ± 5.66 | 11.0 ± 8.48 | 10.57 ± 6.90 | 11.86 ± 8.15 |
| Digit span | 7.3 ± 0.8 | 7.4 ± 0.7 | 7.0 ± 1.3 | 7.0 ± 0.8 | 7.0 ± 1.0 |
| Critical flick fusion: Hz | 3.6 ± 2.9 | 4.4 ± 4.0 | 3.5 ± 3.1 | 2.8 ± 3.0 | 1.7 ± 1.8 |
| *DAT patient group* | | | | | |
| Hit probability | 0.56 ± 0.18 | 0.61 ± 0.21 | 0.66 ± 0.21 | 0.68 ± 0.11 | 0.68 ± 0.14 |
| Sensitivity index | 0.87 ± 0.04 | 0.88 ± 0.03 | 0.88 ± 0.06 | 0.91 ± 0.05 | 0.90 ± 0.04 |
| Reaction times: ms | 661 ± 186 | 615 ± 135 | 540 ± 154 | 582 ± 143 | 574 ± 197 |
| Tapping rate: taps/min | 343.6 ± 49.7 | 330.1 ± 52.3 | 334.4 ± 39.0 | 338.9 ± 46.7 | 355.5 ± 42.52 |
| Memory errors | 23.79 ± 5.95 | 27.57 ± 6.31 | 27.57 ± 7.61 | 28.86 ± 9.68 | 30.71 ± 10.39 |
| Digit span | 5.2 ± 1.6 | 5.3 ± 1.5 | 4.9 ± 1.7 | 5.0 ± 1.6 | 4.9 ± 1.6 |
| Critical flicker fusion: Hz | 8.7 ± 5.0 | 8.9 ± 5.3 | 4.3 ± 2.9 | 4.0 ± 3.1 | 4.6 ± 4.3 |

Nicotine also affects response output and vigour. The effects of nicotine on response rate are more likely to be due to the drug's effects on catecholamine release and turnover (Pert & Chiueh, 1986; Mitchell *et al*, 1987). In particular, it has been shown that nicotine stimulates dopamine release in the nucleus accumbens (Mitchell *et al*, 1987). The effects of nicotine on stimulus sensitivity fit within the theoretical framework that cholinergic drugs affect the signal-to-noise ratio for synaptic processing within cortical regions, and that optimal ACh transmission produces optimal signal trace detectability (Drachman & Sahakian, 1979; Sahakian, 1988). This hypothesis can encompass results from studies of experimental animals and normal human subjects showing that ACh transmission modulates vigilance and discrimination in tasks with a minimal mnemonic load (Warburton, 1987).

The present positive results with nicotine are of special significance in view of the previous resistance of the cognitive decline in DAT to pharmacological treatment, and suggest that such an approach to treatment may still prove to be viable for cases early in the course of the disease. These encouraging results await replication with a larger number of DAT patients, and extension using a non-injectable form of nicotine over a period of time.

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# Eating Habits in Dementia
## A Descriptive Study

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The eating habits of 33 patients with dementia were studied. They were assessed by semi-structured interview with a relative who was able to act as an informant for the whole period of the dementia. Changes in eating were found to be common and included both increased and decreased food intake, altered food choice, the consumption of inedible substances and disturbances in the process of eating. The clinical significance of these changes and some likely underlying mechanisms are discussed.

The diagnosis of dementia requires demonstration of memory impairment and loss of intellectual abilities sufficient to interfere with social or occupational functioning, and associated with impaired thinking or judgement (American Psychiatric Association, 1987). In addition to these necessary diagnostic features, changes in behaviour are common including aggression, wandering, disturbed sleep and alterations in eating habits. These changes are of theoretical interest since they may be direct expressions of underlying neuropathological changes, and they are of practical importance since they may result in management problems (Fairburn & Hope, 1988*a*). Despite this, they have been the subject of little research.

Among the behavioural changes reported as occurring in dementia are alterations in eating habits (Pilleri, 1966; Sourander & Sjogren, 1970; de Ajiuriáguerra *et al*, 1976; Hope *et al*, 1989; Fairburn & Hope 1988*b*). A number of possible mechanisms have been proposed to account for changes; for example, they may be secondary to cognitive impairment or apraxia, or the result of insufficient care-giving, or the consequence of metabolic or neurochemical abnormalities occurring as part of the dementing process (de Ajiuriaguerra *et al*, 1976; Morley & Silver, 1988; Hope *et al*, 1989; Fairburn & Hope, 1988*b*). The changes in eating habits are clinically important since they may give rise to malnutrition, leading to increased infection rates and longer hospital admissions (Hancock *et al*, 1985; Sandman *et al*, 1987), and since they may present carers with the practical difficulty of how to feed the demented person adequately (Lo & Dornbrand, 1984). It has also been argued that poor nutrition may actually cause or exacerbate the deterioration of cognitive function (Munro, 1982; Goodwin *et al*, 1983; Abalan, 1984; Thomas *et al*, 1986).

Individual case reports have described some of the changes in eating habits that occur in dementia (Pilleri, 1966; Cummings & Duchen, 1981; Hope *et al*, 1989) but there have been no descriptive studies of the eating habits of a defined population of subjects with dementia. The purpose of this study was to provide a systematic description, using a standard assessment procedure, of the range and nature of the changes in eating habits that occur in dementia.

## Method

The principal assessment measure was a semi-structured interview with an informant who was able to give an account of the demented subject's behaviour. Subjects were selected on the basis of having a good informant. The subjects themselves were assessed cognitively and physically by a standard procedure.

### Recruitment

The subjects were recruited from a sample of patients who had taken part in an earlier study of behaviour in dementia and were from the case-files of the six psychogeriatric community nurses who serve the Oxford area. The nurses were asked to identify all patients who had been diagnosed by a consultant psychogeriatrician as having multi-infarct dementia or Alzheimer's disease, and who were living at home with a relative able to act as informant for the whole period of the dementia. For the purpose of the study the informants were contacted by telephone and asked if they were willing to help with a further study. If they agreed, an appointment was made to interview them at home. The demented subject was seen at the same time or shortly afterwards.

### Assessment of dementia

The diagnosis of dementia was confirmed by examination of psychiatric and medical records, interview with the informant (see below) and examination of the subject. A Mini-Mental State Examination (MMSE) (Folstein *et al*, 1975) was conducted as well as clinical assessment of the subject's mood and a physical examination. The Ischaemic Score (IS) of Hachinski *et al* (1975) was used to subdivide into those with probable Alzheimer's disease (IS < 4), those with probable multi-infarct dementia (IS > 7) and those with dementia of mixed type (IS 5–6).

### Assessment of eating habits

The informant was interviewed by semi-structured pre-coded interview designed for the present study. The interview was an elaboration of the 'eating' section of the sixth edition of the Present Behavioural Examination (PBE). The PBE covers the full range of behavioural changes in dementia and is based on the Eating Disorder Examination, which has been shown to have high reliability (Cooper & Fairburn, 1987). For each item there is a mandatory probe question, followed by one or more optional subsidiary questions. The behaviour to be rated is defined and a rating scheme with specified anchor points is provided. Preliminary work indicates that the reliability of the PBE is high.

The interview had three main sections concerning: (a) basic demographic data about the subject and informant, (b) the medical and psychiatric history of the subject, including the onset and course of the dementia, and (c) any changes in eating habits, weights and related types of behaviour since the onset of the dementia. The third section was the largest and consisted of 32 key items which, if scored positively, were followed by subsidiary items. The interview took between 45 minutes and two hours to administer and was conducted by the first author.

## Results

### The sample

Of 46 informants approached for possible inclusion in the study, nine refused. Of the 37 subjects, 34 were seen: one refused examination and two others were unavailable. One informant was unable to provide sufficient information for the purposes of the study. Thus 33 pairs of informants and subjects were seen. Of the subjects, 19 were female and 14 male, with an age range of 61–96 years (mean = 77.5 years, s.d. ± 7.7). Twenty-one informants were spouses, ten were children and two were nieces of the subjects. The informant was the main carer in every case.

### Diagnoses

All 33 subjects fulfilled DSM–III–R criteria for dementia (American Psychiatric Association, 1987) and scored less than 24 on the MMSE. On the basis of the Ischaemic Score, 27 subjects were classed as having Alzheimer's disease (AD), four as having multi-infarct dementia (MID), and two as having dementia of mixed type. The MMSE scores of the subjects ranged from 0 to 23 (mean = 10, s.d. ± 7.0). Those with a clinical diagnosis of AD are considered first.

### Changes in eating habits

The main findings are shown in Table I. All subjects showed changes in eating habits or weight, and many exhibited a number of different and possibly inter-related changes.

#### *Reduced food intake*

Two-thirds of the sample (63%) ate significantly less at some stage in their illness than they ate before the onset of dementia. Two subjects had experienced two separate episodes of diminished eating during the course of the dementia. Four subjects had eaten less at an early stage in the dementia at a time when they were living alone. This change in eating habits was one of the first indications of the illness in these cases. Their eating returned to normal when they were looked after by a carer. In the remaining 13 cases (48%) the diminished eating was not accounted for by lack of adequate care. For 13 subjects (48%) currently showing reduced food intake compared with their intake before the onset of dementia, the mean duration of the change was 1.6 years (mean duration of dementia = 5.7 years). Only two subjects had eaten less throughout the dementia. Of these 13 subjects, 10 had lost weight since eating less.

#### *Increased food intake*

A quarter of the subjects (26%) had eaten significantly more at some stage since the onset of the dementia than they had eaten previously, by eating both larger meals and eating more between meals. In many cases these subjects requested still more food, or showed evidence of searching for food. In three-quarters of these subjects the hyperphagia was so severe that the carers had had to restrict their access to food. Six of the seven subjects with increased food intake gained weight. One subject lost weight and this may have been accounted for by persistent overactivity.

#### *Altered food choice*

Ten subjects (37%) showed a change in their preference for sweet foods compared with their pre-morbid preference (eight showed an increase, two a decrease); four (15%) developed a marked increase in their liking for spicy or 'hot' foods; and eight (30%) exhibited an altered choice of non-alcoholic drinks (for example, a change from drinking coffee to drinking tea).

#### *Altered style of eating*

In 16 subjects (60%) their style of eating had altered since the onset of dementia. Eleven used utensils in an abnormal way or were unable to use them at all; nine used their hands to pick up food; and one tried to eat using a pair of scissors.

#### *Oral behaviour*

A quarter (26%) of the sample exhibited oral behaviour: four subjects examined or touched objects with their lips (a feature of the Kluver–Bucy syndrome (Terzian & Dalle Ore, 1955)); five tried to eat inedible substances (for example, faeces, Christmas decorations, paper-towels, soap, flowers, tea-bags); and five ate inappropriate foods (for example, an uncooked chicken leg, raw eggs, uncooked potatoes and onions, cat food, a whole jar of marmalade).

TABLE I

*Reported changes in eating habits and weight in 33 subjects with dementia*

| *Subject number* | *IS*[1] | *Age at onset: years* | *Duration: years* | *MMSE*[2] | *Amount eaten* | | *Altered choice of food* | *Oral behaviour* | *Exercise change* | *Weight change* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Increase* | *Decrease* | | | | |
| 1 | 0 | 58 | 9 | 23 | 0 | + | + | 0 | ↑ | ↓ |
| 2 | 0 | 81 | 1 | 19 | 0 | + | + | + | ↓ | ↓ |
| 3 | 0 | 71 | 9 | 16 | 0 | (+) | + | 0 | 0 | (↓) |
| 4 | 0 | 78 | 6 | 14 | + | 0 | + | 0 | ↓ | ↑ |
| 5 | 1 | 67 | 5 | 18 | 0 | + | + | 0 | ↓ | ↓ |
| 6 | 1 | 70 | 2 | 12 | (++) | 0 | 0 | 0 | 0 | (↑) |
| 7 | 1 | 82 | 14 | 1 | 0 | + | + | 0 | ↓ | (↑) |
| 8 | 1 | 77 | 2 | 13 | 0 | ++ | + | 0 | ↓ | ↓ |
| 9 | 1 | 79 | 7 | 9 | 0 | 0 | 0 | 0 | 0 | ↓ |
| 10 | 1 | 76 | 6 | 10 | 0 | + | + | 0 | ↓ | ↓ |
| 11 | 1 | 90 | 4 | 19 | 0 | 0 | + | 0 | 0 | 0 |
| 12 | 2 | 73 | 4 | 8 | + | 0 | + | + | 0 | (↓)↑ |
| 13 | 2 | 66 | 6 | 1 | ++ | 0 | + | ++ | 0 | (↓)↑ |
| 14 | 2 | 73 | 10 | 5 | + | (+) | + | 0 | 0 | (↓)↑ |
| 15 | 2 | 60 | 6 | 3 | 0 | (++) | + | + | 0 | (↓)↑ |
| 16 | 2 | 62 | 10 | 0 | 0 | + | 0 | + | ↓ | ↓ |
| 17 | 3 | 74 | 3 | 10 | 0 | (+)+ | 0 | 0 | (↓) | (↓)↓ |
| 18 | 3 | 82 | 4 | 22 | 0 | + | + | 0 | ↓ | ↓ |
| 19 | 3 | 72 | 3 | 9 | 0 | + | + | 0 | ↓ | ↓ |
| 20 | 3 | 70 | 6 | 1 | ++ | 0 | + | 0 | 0 | ↑ |
| 21 | 3 | 54 | 11 | 0 | + | 0 | + | + | ↑ | ↓ |
| 22 | 3 | 77 | 5 | 5 | 0 | (+) | 0 | 0 | 0 | (↓) |
| 23 | 3 | 72 | 3 | 14 | 0 | + | 0 | 0 | 0 | 0 |
| 24 | 4 | 69 | 4 | 3 | 0 | + | 0 | 0 | ↓ | ↓ |
| 25 | 4 | 63 | 8 | 13 | 0 | 0 | 0 | 0 | ↓ | ↓ |
| 26 | 4 | 62 | 4 | 1 | 0 | + | 0 | 0 | ↓ | 0 |
| 27 | 4 | 77 | 3 | 8 | 0 | 0 | 0 | + | 0 | 0 |
| 28 | 6 | 57 | 4 | 19 | 0 | 0 | + | + | 0 | ↓ |
| 29 | 6 | 76 | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 7 | 80 | 5 | 12 | 0 | + | + | 0 | ↓ | ↓ |
| 31 | 9 | 79 | 2 | 22 | 0 | 0 | 0 | 0 | 0 | ↓ |
| 32 | 10 | 75 | 3 | 15 | 0 | + | + | 0 | ↓ | ↓ |
| 33 | 10 | 72 | 6 | 3 | + | (+) | 0 | 0 | ↓ | (↓)↑ |

1. Ischaemic Score (Hachinski *et al*, 1975).
2. Mini-Mental State Examination total score (Folstein *et al*, 1975).

0 no change; + moderate change; + + severe change; () temporary change.

### *Weight loss*

The carers reported a weight loss in over two-thirds of the subjects (70%) at some stage during the dementia. This occurred early in the dementia in seven subjects; in six of these cases the weight lost was regained. One subject went on to lose weight again. For 12 subjects, their weight at the time of the study was lower than their pre-morbid weight.

### *Weight gain*

Six subjects (22%) had gained weight and were heavier at the time of the study than they had been before the onset of dementia. Two others had gained weight temporarily at an early stage.

### **Subjects with clinical diagnosis of multi-infarct dementia**

Both an increase and a decrease in eating and in weight were observed in the four subjects with a clinical diagnosis of multi-infarct dementia. In addition, two of these subjects showed an alteration in food choice.

## **Relation of the changes in eating to other factors**

### *Functional psychiatric illness*

Decreased food intake with weight loss could be attributed to depressive illness in only one subject (subject 17). There were no cases of psychotic phenomena associated with changes in eating.

### *History of dieting*

None of the informants reported that the subjects had dieted significantly in the past.

### *Physical illness*

None of the changes reported here were associated with known or apparent physical illness. Short-term changes associated with brief episodes of physical illness were excluded.

### *Medication*

Increased intake of food was related in time to the taking of medication in two cases (dexamethasone in subject 6 and thioridazine in subject 33). Subject 15 gained weight when first taking chlorpromazine. In no other case was a change in medication associated with a change in eating habits or weight.

## Discussion

The aim of this study was to describe the changes in eating habits that occur in Alzheimer's disease and multi-infarct dementia. The subjects were chosen from a sample of those with dementia known to local community psychiatric nurses. All the subjects were living at home with a relative who could act as an informant. Because of these selection factors the sample is likely to be biased towards the physically healthy with dementia of moderate severity but not sufficiently severe to require institutionalisation. Behavioural problems are likely to be over-represented in the sample since they may have resulted in the subject's coming to the attention of the psychogeriatric team. In no case was a change in eating habits the behavioural problem for which the subject was originally referred. All the subjects were diagnosed clinically as having either Alzheimer's disease or multi-infarct dementia, and the Ischaemic Score (Hachinski *et al*, 1975) was used to distinguish between these diagnoses. Since most of the subjects were diagnosed as having Alzheimer's disease, the results are given for this group separately. The number of those with a diagnosis of multi-infarct dementia was too small for useful conclusions to be drawn. However, both an increase and decrease in the amount eaten was observed in these subjects. In the absence of neuropathological data, definitive diagnosis was not possible.

The semi-structured interview used to assess the changes in eating was developed specifically for this study. It involved a detailed interview with an informant. All the informants had known the subject both before the onset of dementia and throughout the illness. Only clear and substantial reported changes in eating habits and weight have been reported.

The most common change in eating habits observed was a decrease in intake associated with a decrease in weight. Several alternative explanations for this change are discussed below. An increase in eating occurred in a quarter of the subjects and in many cases it was so marked that the carer had to restrict the subject's access to food. In all but one subject the increase was associated with weight gain. Thus there was no evidence that the hyperphagia occurred as a compensatory mechanism for weight loss or gastro-intestinal malabsorption, as suggested by Abalan (1984). Hyperphagia has been reported in dementia as part of the Kluver–Bucy syndrome (Sourander & Sjogren, 1970; Pilleri, 1966). However, in the present study only two subjects with hyperphagia examined objects with their lips, and otherwise there was no association between hyperphagia and the other features of the syndrome in this sample.

The marked changes in food choice observed are, as far as the authors are aware, a novel observation. The commonest change was an increased consumption of sweet foods (in 30% of subjects with Alzheimer's disease). Four subjects ate more spicy foods than they had previously eaten. Seven Alzheimer subjects had eaten substances which are not normally eaten (pica). Some of these substances were foods (but inappropriate either in quantity or because they were uncooked); some were disgusting and dangerous, for example, faeces; and some were neutral, for example, paper. Changes in the physical act of eating were also described. These took the form of using normal utensils abnormally; or using abnormal utensils; or using the hands inappropriately.

Various mechanisms could underlie these changes in eating habits. Five psychological mechanisms merit consideration.

First, self-neglect could account for the weight loss in four of the subjects with Alzheimer's disease. In these cases the weight loss occurred early in the dementing process and while the subjects were living alone. In these subjects the weight lost was regained when they moved in with a carer. This was quite different from the decrease in eating and weight loss observed in other subjects, which was a later feature of the disease and could not be accounted for by neglect.

Secondly, memory impairment might be thought to account both for the decrease in eating in some subjects (i.e. forgetting to eat) and for the increase in eating in others (i.e. forgetting that they had eaten). However, as we have argued elsewhere (Fairburn & Hope, 1988*b*; Hope *et al*, 1988), such explanations are unsatisfactory both because it seems unlikely that memory impairment would permanently override sensations of hunger and satiety and because such changes should accompany other disorders associated with memory loss. To our knowledge this is not the case.

Thirdly, a failure to recognise objects might account both for the eating of inedible objects and for the use of odd utensils. With regard to the eating of inedible objects, it would be interesting to investigate experimentally what objects are *not* eaten in order to try to understand the classificatory system that the demented person is using.

Fourthly, Rozin & Fallon (1987) have investigated the acquisition of *digust*, i.e. "the revulsion at the prospect of oral incorporation of offensive subjects". It is possible that underlying the eating of objects such as faeces (see Ghaziuddin & McDonald, 1985) there is a loss of *disgust* as distinct from a failure of recognition. It would be interesting to explore this possibility and to use the experimental paradigms that Rozin has developed for research with children.

Fifthly, the hyperphagia and changes in food choice could, in principle, develop because the subjects had been dieters in the past, and the dementia had interfered with their ability to diet. However, a history of dieting was specifically denied in all cases by the informants.

Five possible physical mechanisms also merit consideration.

First, the neurochemical or neuropathological changes that occur in dementia result in a disruption of the central control of food intake and weight. Serotonin and noradrenaline are known to be involved in the mechanisms controlling eating and food choice (Leibowitz, 1985; Blundell, 1984) and both are abnormal in AD (Rossor *et al*, 1981; Rossor *et al*, 1984; Crow *et al*, 1984; Whitford, 1986). Similarly, the hypothalamus and medial temporal lobe are severely affected in AD (Ishii, 1966; Herzog & Kemper, 1980; Tomlinson, 1982; Mann *et al*, 1985) and both are involved in the control of food intake (Rolls *et al*, 1979; Gold, 1973; Rabin, 1972). Substance P has been implicated in the recognition of spicy or chilli-containing foods (Morley & Silver, 1988) and a reduction in substance P has been reported in dementia (Davies *et al*, 1982). Thus, the changes in the amount eaten, in weight and in food choice, may be the result of damage to the central mechanisms that control eating.

Secondly, the changes in food choice could result from a change in the sense of taste and of smell. For example, the development of a liking for spicy foods might reflect a desire to taste foods in the presence of impaired taste and smell perception. This is an interesting speculation in the light of recent evidence that olfactory deficits may occur early in dementia (Rezek, 1987).

Thirdly, malabsorption has been suggested as a cause of the weight loss that occurs in dementia (Abalan, 1984) and it might be expected to account for the increase in food intake. However, as noted earlier, the findings of the present study suggest that the changes in weight reflect a change in food intake rather than vice versa.

Fourthly, neurological deficits leading to dyspraxias probably account for some of the changes in the process of eating.

Fifthly, in three individuals the effects of medication could account for the changes in eating seen.

In conclusion, this study has shown that changes in eating habits are common in dementia and take various forms. They are important clinically because they can have a detrimental effect on health and also because they can pose a major problem for carers. The changes are likely to be the expression of a number of different underlying mechanisms. It will be important to understand the mechanisms in order to develop specific treatments.

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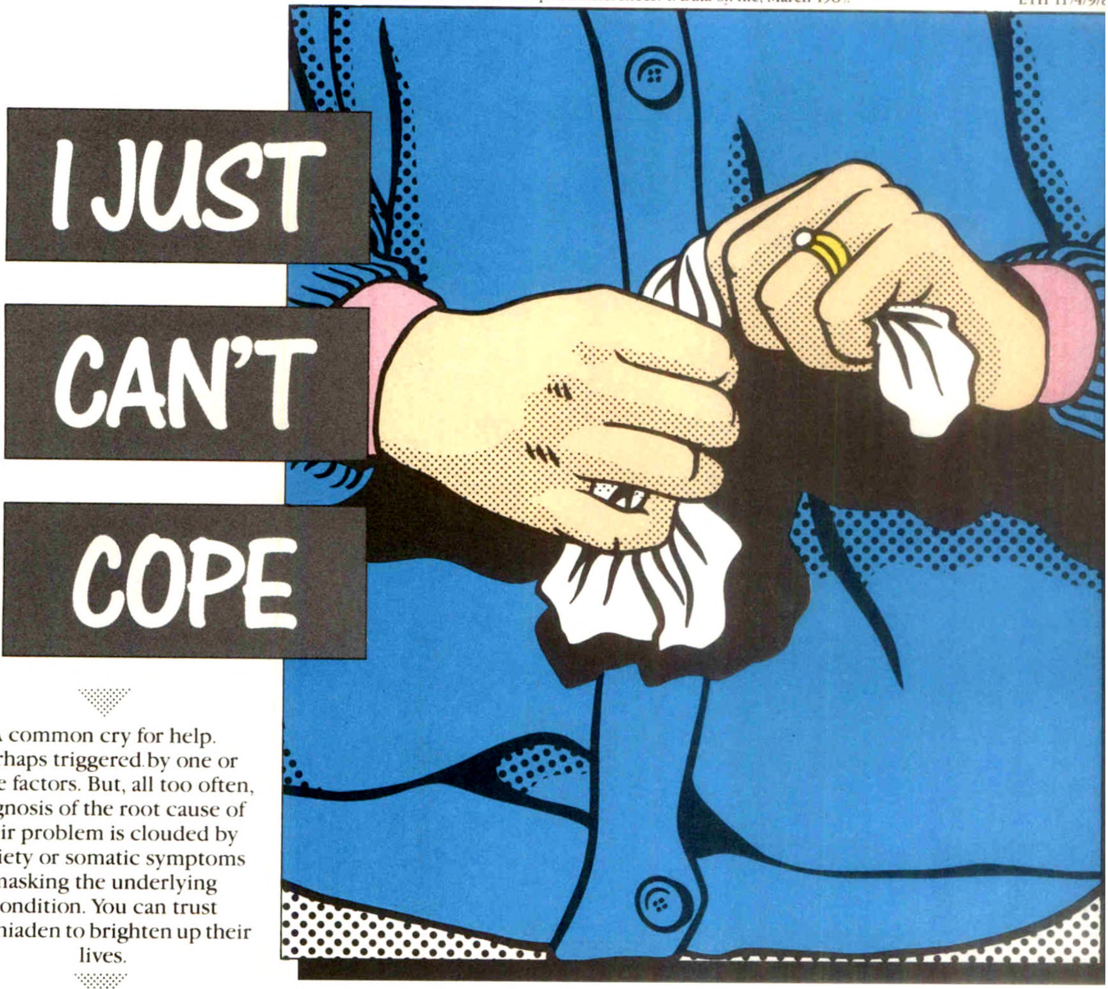

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*Usage in nursing mothers:* Prozac should not be prescribed to nursing mothers.

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*Monoamine oxidase inhibitors:* At least 14 days should elapse between discontinuation of an M and initiation of treatment with Prozac. At least five weeks should elapse between discontinu of Prozac and initiation of therapy with an MAOI.

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Caution is advisable when Prozac is used in patients with acute cardiac disease.

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For further information, see data sheet.

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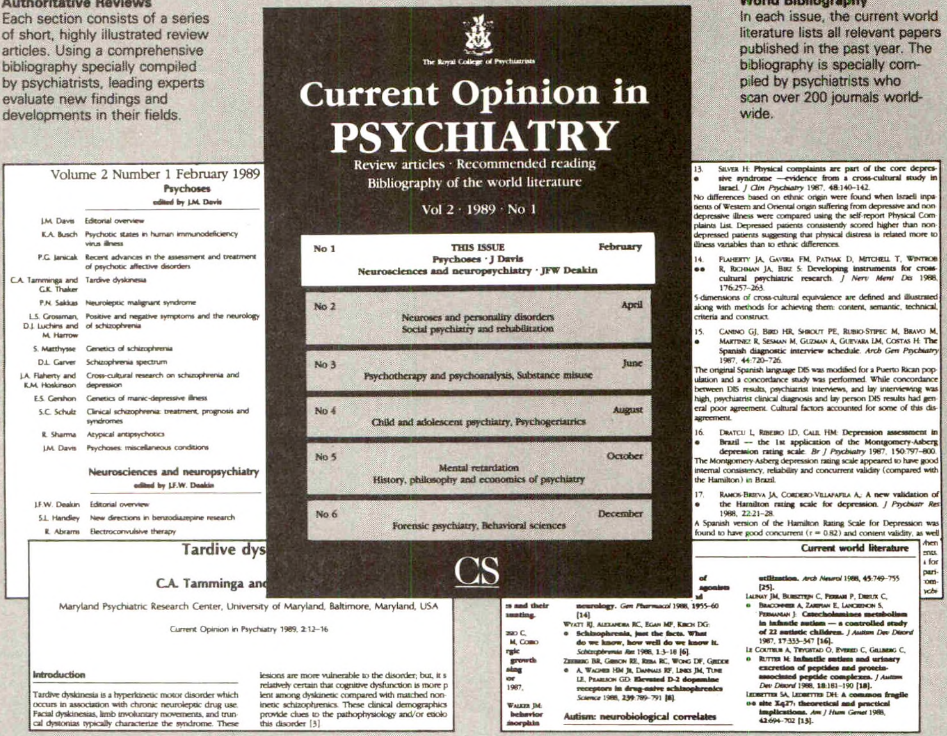

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Maryland Psychiatric Research Center, University of Maryland, Baltimore, Maryland, USA

Current Opinion in Psychiatry 1989, 2:12–16

**Introduction**

Tardive dyskinesia is a hyperkinetic motor disorder which occurs in association with chronic neuroleptic drug use. Facial dyskinesias, limb involuntary movements, and truncal dystonias typically characterize the syndrome. These

lesions are more vulnerable to the disorder; but, it is relatively certain that cognitive dysfunction is more prevalent among dyskinetic compared with matched non-dyskinetic schizophrenics. These clinical demographics provide clues to the pathophysiology and/or etiology of this disorder [3].

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*British Journal of Psychiatry* (1989), **154**, 807–812

# The Validity of the Eating Disorder Examination and its Subscales

ZAFRA COOPER, PETER J. COOPER and CHRISTOPHER G. FAIRBURN

The EDE is a semistructured interview which has been developed as a measure of the specific psychopathology of anorexia nervosa and bulimia nervosa. To establish its discriminant validity it was administered to 100 patients with anorexia nervosa or bulimia nervosa and to 42 controls. The two groups differed significantly on all items. Five subscales were derived on rational grounds and evaluated on the two populations. The $\alpha$ coefficients for each subscale indicated a satisfactory degree of internal consistency. The EDE provides clinicians and research workers with a detailed and comprehensive profile of the psychopathological features of patients with eating disorders.

The psychopathology of anorexia nervosa and bulimia nervosa is complex and varied (Garfinkel & Garner, 1982; Fairburn *et al*, 1986). It has both specific and general components. The specific psychopathology is peculiar to these two disorders and their variants, and includes: disturbed eating habits (extreme dietary restriction, episodes of bulimia, avoidance of eating in public), various methods of weight control (self-induced vomiting, the misuse of purgatives and diuretics, vigorous exercising and extreme dieting), and over-valued ideas about shape and weight. The general psychopathology consists of features found in other psychiatric disorders, for example, a variety of depressive and anxiety symptoms.

Research into the nature and treatment of anorexia nervosa and bulimia nervosa has to take account of this wide range of psychopathology (Wilson, 1987). For a population to be described adequately, standardised measures of both the specific and general psychopathology need to be used. The assessment of the latter does not present a problem since a variety of suitable standardised instruments are available. However, far fewer measures of the specific psychopathology of eating disorders are available and, with two exceptions, these are self-report instruments. They include the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979) and the Eating Disorder Inventory (Garner *et al*, 1983), which are general measures designed to assess a wide range of the behaviour and attitudes of patients with anorexia nervosa and bulimia nervosa.

In addition, there are specific self-report measures which are intended to assess particular aspects of these patients' psychopathology. They include the Binge Eating Scale (Gormally *et al*, 1982), the Bulimia Test (Smith & Thelen, 1984), the Bulimic Investigatory Test (Henderson & Freeman, 1987), the Revised Restraint Scale (Herman & Polivy, 1980), the Three Factor Eating Questionnaire (Stunkard & Messick, 1985), the Dutch Eating Behaviour Questionnaire (van Strien *et al*, 1986) and the Body Shape Questionnaire (Cooper *et al*, 1987).

However, self-report measures are not well suited either for detailed psychopathological studies or for research into the effects of treatment, since many features of these eating disorders are difficult to elicit and define. This is particularly true of the characteristic overvalued ideas concerning shape and weight (Cooper & Fairburn, 1987), which are central to diagnosis (Fairburn & Garner, 1986).

Several of the behavioural features of anorexia nervosa and bulimia nervosa also present difficulties of definition and interpretation. A good example is 'binge eating'. Many of the self-report questionnaires ask about binge eating, yet this term does not have a generally accepted definition. It certainly is not the case that people who report eating in binges necessarily experience episodes of overeating of the type seen among patients with anorexia nervosa or bulimia nervosa. Even among patients who experience florid episodes of uncontrolled overeating, episodes are not identical. Thus, for example, during treatment there is often a change in the nature of these episodes: the amount of food consumed tends to decrease, and there is frequently a less intense sense of loss of control. Despite such changes, patients generally continue to term these episodes as 'binges'. Clearly, self-report questionnaires which simply inquire about the frequency of binge eating will not detect subtle changes of this type.

The difficulties described above could be overcome with the use of a standardised interview (Wilson, 1987). Such an interview would have to be semi-structured so as to provide flexibility without sacrificing reliability, and all key terms would need to be defined. Although such a measure would be less easy to administer and score than a self-report questionnaire, the data obtained would be likely to have greater validity.

Two semistructured interview measures of the specific psychopathology of anorexia nervosa and bulimia nervosa have recently been developed. The Clinical Eating Disorder Rating Instrument has 35 items, the first 22 of which address the specific psychopathology of anorexia nervosa and bulimia nervosa. The remainder of the instrument is concerned with general psychopathology. Data on its reliability have been reported (Palmer *et al*, 1987), but no information has been published on its validity. The Eating Disorder Examination (EDE) is a more detailed measure. It has been developed and revised over the past five years with the aim of maximising its reliability (Cooper & Fairburn, 1987). The interview focuses exclusively on the current levels of specific psychopathology of these two disorders, particularly the attitudes to shape and weight. It consists of 62 items and takes up to an hour to complete. It is necessary to undergo brief training in order to use the interview but a clinical qualification is not essential.

## Method and Results

The EDE was administered to 100 patients with anorexia nervosa or bulimia nervosa (according to DSM-III-R Criteria (American Psychiatric Association, 1987)) and to 42 controls. The 53 patients with bulimia nervosa represent a consecutive series of referrals to out-patient eating disorder clinics in Oxford ($n=20$) and Cambridge ($n=33$). The patients with anorexia nervosa were referrals to an adolescent unit in Oxford ($n=22$), an out-patient eating disorder clinic in Cambridge ($n=7$), and Toronto General Hospital ($n=18$). Assignment to diagnostic groups was made by the clinicians treating these patients. The diagnosis of each patient was checked by ZC before inclusion in the appropriate diagnostic group by confirming the presence of the DSM-III-R criteria from standard clinical information collected without reference to the EDE ratings. The controls were randomly drawn from a general practice register in Cambridge to identify healthy women aged 18–35 years. After consultation with the general practitioner, 50 women were sent a letter asking them to agree to be interviewed; four refused, two could not be traced, and two were found to have a history of an eating disorder. The controls and patients were similar in terms of age (Table I). The control group and the patients with bulimia nervosa were of average weight, and the patients with anorexia nervosa were substantially underweight (Table I). The mean total scores on the EAT of the two patient groups are comparable to those of other published series; the mean EAT score for the controls is somewhat lower than in previous British series (e.g. Cooper & Fairburn, 1983), but this is to be expected given that the group was selected for the absence of a history of eating problems.

### Distribution of individual EDE items

The individual EDE items were found to discriminate well between those with eating disorders and controls (Fig. 1).

A series of Mann–Whitney *U* tests revealed the patients and controls to be different at a high level of significance on all items, the least significant difference being for 'food avoidance' ($z=2.73$, two-tailed $P<0.006$); these differences also emerged when the controls were compared with each of the two patient groups separately.

TABLE I
*Age, weight and eating habits of subjects*

| | *Anorexia nervosa (n=47)* | | *Bulimia nervosa (n=53)* | | *Controls (n=42)* | |
|---|---|---|---|---|---|---|
| | *Mean* | *s.d.* | *Mean* | *s.d.* | *Mean* | *s.d.* |
| Age: years | 20.5 | 4.9 | 22.1 | 4.2 | 21.3 | 6.9 |
| % Matched-population weights | 73.4 | 8.0 | 103.3 | 12.0 | 99.9 | 8.8 |
| Frequency of vomiting: mean no. of episodes per month | 18.0 | 40.8 | 30.8 | 35.5 | 0 | – |
| Frequency of bulimic episodes[1]: mean no. of episodes per month | 10.4 | 23.6 | 26.5 | 27.8 | 0 | – |
| EAT total: mean | 53.4 | 18.6 | 48.7 | 14.3 | 8.8 | 5.4 |

1. Bulimic episodes were defined as episodes of uncontrolled excessive overeating.

### Derivation of subscales

A preliminary set of five subscales was derived by the rational grouping of items together on the basis of similarity of content (Table II), with the intention of representing the major areas of the psychopathology of anorexia nervosa and bulimia nervosa. The subsequent statistical analyses reported were undertaken to assess their internal consistency and discriminant validity. The subscales were labelled 'restraint', 'bulimia', 'eating concern', 'weight concern', and 'shape concern'. The Cronbach $\alpha$ coefficients for each of the subscales respectively, calculated using the full sample of 142 patients and controls, were 0.75, 0.90, 0.78, 0.67, 0.79, indicating a satisfactory degree of internal consistency for all subscales.

Table II shows that, with two exceptions, the average correlation of the subscale items is greater when items are correlated with their own subscale total than when correlated with the other subscale totals. The exceptions are the items comprising the 'weight concern' subscale which, on average, correlate at a higher level with the 'shape concern' subscale total than with the 'weight concern' subscale total; and the items comprising the 'shape concern' subscale which, on average, correlate at a higher level with the 'weight concern' subscale than with the 'shape concern' subscale.

'Sensitivity to weight gain' correlated at a relatively low level with its own subscale total ($r=0.26$) and at a high level with the 'restraint' ($r=0.59$) and 'shape concern' ($r=0.61$)

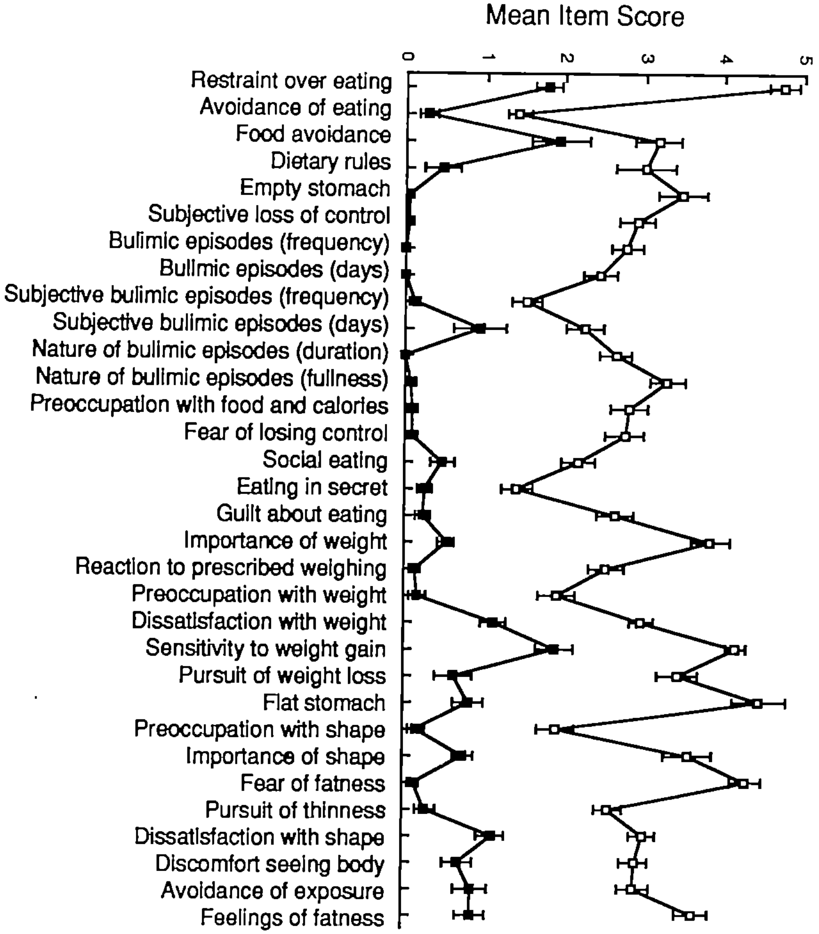

FIG. 1 Mean scores and standard errors for the main EDE items for patients with eating disorders (—□—) and controls (—■—).

subscale totals. This item is, however, an important one from a descriptive point of view and one which clearly differentiates patients from controls (see Fig. 1). It would therefore seem inappropriate to drop it from the instrument altogether, and since the subscales were derived on rational rather than empirical grounds, it would also be inappropriate to move it to another subscale. It therefore seems sensible to retain the item within the full EDE, but drop it from the 'weight concern' subscale. To do so raises the subscale $\alpha$ coefficient to 0.68 and the mean item total correlation to 0.44

'Pursuit of thinness' presents a similar difficulty. This item correlated at a low level with the 'shape concern' subscale total ($r = 0.11$), whereas it correlated at a high level with the 'restraint' ($r = 0.54$), 'eating concern' ($r = 0.40$) and 'weight concern' ($r = 0.47$) subscale totals. As can be seen from Fig. 1, it also clearly differentiates patients from controls. Although the concept is of considerable clinical importance (Bruch, 1973; Garfinkel & Garner, 1982), the low correlation it has with the 'shape concern' subscale clearly does not justify retaining it as a subscale item. Again, it seems appropriate to drop this item from the subscale while retaining it within the full EDE as an individual item of interest in itself. Having made this adjustment, the new eight item 'shape concern' subscale has an $\alpha$ coefficient of 0.82 and mean item total correlation of 0.54.

Table III shows the mean subscale total scores for the two patient groups and the controls, after the modifications described above were made. It is apparent that the patient samples differ markedly from the controls on all five subscales. Indeed, when the subscale means of the combined patient sample were compared with those of the controls, the smallest Student's $t$ value was greater than 10 (d.f. = 142; $P < 0.001$).

TABLE II
*Correlation of individual items[1] with the mean preliminary subscale[2] totals*

| | Subscales | | | | |
|---|---|---|---|---|---|
| | *Restraint* | *Bulimia* | *Eating concern* | *Weight concern* | *Shape concern* |
| 'Restraint' items | | | | | |
| Restraint over eating | 0.58 | 0.32 | 0.48 | 0.60 | 0.57 |
| Avoidance of eating | 0.42 | 0.05 | 0.23 | 0.31 | 0.28 |
| Food avoidance | 0.47 | 0.26 | 0.33 | 0.41 | 0.44 |
| Dietary rules | 0.57 | 0.20 | 0.43 | 0.46 | 0.46 |
| Empty stomach | 0.57 | 0.35 | 0.49 | 0.54 | 0.54 |
| Mean | 0.52 | 0.12 | 0.39 | 0.46 | 0.46 |
| 'Bulimia' items | | | | | |
| Subjective loss of control over eating | 0.35 | 0.79 | 0.66 | 0.54 | 0.58 |
| Bulimic episodes: frequency | 0.32 | 0.86 | 0.59 | 0.51 | 0.50 |
| Bulimic episodes: number of days | 0.12 | 0.77 | 0.27 | 0.23 | 0.24 |
| Subjective bulimic episodes: frequency | 0.32 | 0.52 | 0.50 | 0.37 | 0.41 |
| Subjective bulimic episodes: number of days | 0.08 | 0.55 | 0.14 | 0.16 | 0.17 |
| Nature of bulimic episodes: duration | 0.27 | 0.68 | 0.53 | 0.49 | 0.51 |
| Nature of bulimic episodes: fullness | 0.37 | 0.79 | 0.56 | 0.50 | 0.54 |
| Mean | 0.26 | 0.71 | 0.46 | 0.40 | 0.42 |
| 'Eating concern' items | | | | | |
| Preoccupation with food and calories | 0.45 | 0.51 | 0.55 | 0.55 | 0.58 |
| Fear of losing control over eating | 0.38 | 0.50 | 0.48 | 0.52 | 0.62 |
| Social eating | 0.49 | 0.25 | 0.58 | 0.51 | 0.53 |
| Eating in secret | 0.25 | 0.30 | 0.55 | 0.34 | 0.39 |
| Guilt about eating | 0.55 | 0.44 | 0.67 | 0.57 | 0.56 |
| Mean | 0.42 | 0.40 | 0.56 | 0.50 | 0.54 |
| 'Weight concern' items | | | | | |
| Importance of weight | 0.21 | 0.06 | 0.25 | 0.31 | 0.36 |
| Reaction to prescribed weighing | 0.47 | 0.35 | 0.50 | 0.35 | 0.55 |
| Preoccupation with weight | 0.41 | 0.35 | 0.54 | 0.39 | 0.67 |
| Dissatisfaction with weight | 0.46 | 0.47 | 0.46 | 0.54 | 0.73 |
| Sensitivity to weight gain | 0.59 | 0.28 | 0.41 | 0.26 | 0.61 |
| Pursuit of weight loss | 0.52 | 0.42 | 0.55 | 0.61 | 0.66 |
| Mean | 0.45 | 0.32 | 0.45 | 0.41 | 0.60 |
| 'Shape concern' items | | | | | |
| Flat stomach | 0.25 | 0.16 | 0.16 | 0.32 | 0.40 |
| Preoccupation with shape | 0.41 | 0.35 | 0.54 | 0.67 | 0.60 |
| Importance of shape | 0.22 | 0.21 | 0.29 | 0.59 | 0.50 |
| Fear of fatness | 0.56 | 0.53 | 0.63 | 0.71 | 0.47 |
| Pursuit of thinness | 0.54 | 0.19 | 0.40 | 0.47 | 0.11 |
| Dissatisfaction with shape | 0.44 | 0.43 | 0.50 | 0.67 | 0.54 |
| Discomfort, when seeing body | 0.52 | 0.38 | 0.53 | 0.65 | 0.53 |
| Avoidance of exposure | 0.45 | 0.31 | 0.44 | 0.61 | 0.55 |
| Feelings of fatness | 0.54 | 0.51 | 0.62 | 0.72 | 0.68 |
| Mean | 0.44 | 0.34 | 0.46 | 0.60 | 0.49 |

1. Corrected item total correlations are given where appropriate.
2. These subscales are the preliminary versions and not the final ones. 'Sensitivity to weight gain' and 'pursuit of thinness' are not included in the final version of the subscales.

TABLE III
*Revised EDE subscale totals for patients with bulimia nervosa, patients with anorexia nervosa, and normal controls*

| | *Anorexia nervosa* | | *Bulimia nervosa* | | *Controls* | |
|---|---|---|---|---|---|---|
| | *Mean* | *s.d.* | *Mean* | *s.d.* | *Mean* | *s.d.* |
| Restraint | 3.17 | 1.47 | 3.14 | 1.22 | 0.91 | 0.91 |
| Bulimia | 1.58 | 1.55 | 3.42 | 0.79 | 0.41 | 0.87 |
| Eating concern | 2.17 | 1.62 | 2.43 | 1.30 | 0.22 | 0.33 |
| Weight concern | 2.40 | 1.48 | 3.14 | 1.44 | 0.52 | 0.62 |
| Shape concern | 2.85 | 1.22 | 3.55 | 1.35 | 0.64 | 0.75 |

Finally, the revised subscale totals were intercorrelated for each of the three samples. Since, in psychopathological terms, the three samples do not stand in a simple linear relationship to one another, one would expect, as an index of discriminant validity, different patterns of correlations to emerge. It is apparent from Table IV that the pattern of correlations was indeed different across samples. For example, for the patients with anorexia nervosa, 'eating concern' was highly correlated with 'bulimia', 'weight concern' and 'shape concern', whereas for the patients with bulimia nervosa it was moderately highly correlated with all the subscales, and for the normal controls it was weakly

TABLE IV

*Intercorrelations of revised subscales for the three samples*

| | *Anorexia nervosa* | | | | | *Bulimia nervosa* | | | | | *Controls* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *R* | *EC* | *B* | *WC* | *SC* | *R* | *EC* | *B* | *WC* | *SC* | *R* | *EC* | *B* | *WC* | *SC* |
| R | – | 0.28 | 0.19 | 0.49 | 0.45 | – | 0.30 | 0.20 | 0.32 | 0.26 | – | 0.53 | 0.16 | 0.43 | 0.37 |
| EC | | – | 0.56 | 0.56 | 0.52 | | – | 0.36 | 0.35 | 0.36 | | – | 0.06 | 0.23 | 0.37 |
| B | | | – | 0.24 | 0.12 | | | – | 0.00 | 0.10 | | | – | 0.05 | 0.22 |
| WC | | | | – | 0.55 | | | | – | 0.86 | | | | – | 0.54 |
| SC | | | | | – | | | | | – | | | | | – |

R, restraint; EC, eating concern; B, bulimia; WC, weight concern; SC, shape concern.

associated with 'weight concern' and moderately highly correlated with 'shape concern'. Similarly, although 'weight concern' and 'shape concern' were highly correlated for all three samples, they were particularly highly associated in the case of the patients with bulimia nervosa.

## Discussion

The individual items of the EDE discriminate well between patients with eating disorders and normal controls; indeed, the means and standard errors of all these individual items do not overlap for the two groups. Despite the impressive distributions shown in Fig. 1, it is important to note that the control group was specifically selected for the absence of a history of eating problems and they therefore represent a group particularly unconcerned about body shape and weight. For this reason it is important that a comparison be made between the EDE scores of patients with eating disorders and individuals concerned about eating, shape, and weight but who do not have an eating disorder. Wilson & Smith (1989) have made such a comparison and found that, unlike the self-report Eating Disorder Inventory, the EDE discriminated well between the groups.

The five subscales grouped items together in a systematic fashion to represent the major areas of psychopathology. The α coefficients of each of these subscales indicated a satisfactory degree of internal consistency in all cases, thus providing empirical justification for the rational procedure. Since both 'sensitivity to weight gain' and 'pursuit of thinness' appear to be of clinical importance it was decided to retain them within the full EDE but, in accordance with the empirical evidence, to remove them from their respective subscales. This modification to the subscales slightly raised their α coefficients. Although items were originally assigned to subscales on rational rather than empirical grounds, it seemed appropriate to use empirical findings to delete items from subscales. While the empirical findings could have been used to re-assign items to different subscales, this was not considered appropriate because it would have undermined the original purpose of grouping items together in terms of the extent to which they were conceptually related. This procedure is justified by the fact that it was necessary to drop only two items, and by the high α coefficients of all five subscales. It is clear from Table III that the amended subscales differentiate clearly between patients and controls.

The puzzling anomaly over the 'weight concern' and 'shape concern' subscales indicates that for the group of patients and controls studied, weight concerns and shape concerns are very closely associated with each other. This may reflect the fact that the most objective and accessible way of assessing body shape for individuals is by means of body weight; and that concerns about weight are, at least in part, a secondary consequence of concerns about shape. Whether this close association holds for all groups remains to be seen. For this reason, it seems premature to assume that the two subscales can be combined.

## Conclusion

The EDE overcomes many of the limitations of the self-report measures of the psychopathology of eating disorders by providing unambiguous definitions of all key items and by addressing in detail the complex concerns about shape and weight. It gives a detailed and comprehensive profile of the psychopathological features characteristic of patients with eating disorders. Thus, it makes it possible to describe particular patient populations in detail; to make precise comparisons between different patient groups, such as those with anorexia nervosa and those with bulimia nervosa; to compare patient populations with groups with no eating disorders but with high levels of concern about shape or weight; and, of particular importance, to assess the effects of specific treatments on the psychopathology of anorexia nervosa and bulimia nervosa.

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# The Use of Rating Scales to Identify Post-natal Depression

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One hundred and forty-seven mothers were screened for major depression at six to eight weeks post-partum. Using predetermined cut-off points, the Edinburgh Postnatal Depression Scale and the Beck scale were compared in their abilities to identify the 15% of subjects who had major depression according to DSM-III criteria. The sensitivity of Edinburgh scale was 95% and its specificity 93%. The performance of the Beck scale was markedly inferior, with a sensitivity of 68% and specificity of 88%.

In the year following delivery, a high incidence of maternal depression has been reported in many studies, the exact incidence measured being partly dependent on the methods used. For example, in a *retrospective* general-practice study, Ryle (1961) found depression in 3% of women post-partum, whereas Dalton (1971) in a *prospective* study carried out in general practice found an incidence of 7%. Pitt (1968), in a prospective study of 305 mothers admitted to the 'lying-in' wards of the London Hospital, found an incidence of depressive illness of approximately 11% in the year following delivery.

Paykel *et al* (1980), conducting a study in a post-natal check-up clinic, found an incidence of 20% mild depression in a population of 120 mothers at six weeks post-partum.

It has been shown that factors associated with this common condition include an increased number of life events in the previous 12 months, previous psychiatric illness (Paykel *et al*, 1980), marital disharmony (Watson *et al*, 1984) and higher levels of neurotic symptoms when well (Cox *et al*, 1982). Other factors include friction with relatives, in-laws, older children or neighbours; physical illness or handicap in family members; financial worries; and poor housing (Kumar & Robson, 1984).

The condition is important in that it may have long-term effects on the children of such mothers, producing, for example, later behavioural disturbances (Wrate *et al*, 1985). Non-accidental injury to the child is also sometimes associated with this problem (Margison & Brockington, 1982).

In view of the high incidence and the nature of the illness, it would be helpful to screen mothers in the community to identify those suffering from the condition, and hence refer them for appropriate help and treatment.

As to methods of screening patients for depression (Williams *et al*, 1980), besides self-report questionnaires there are three types of assessment: firstly, a full clinical interview with a psychiatrist; secondly, a structured clinical interview such as the Present State Examination (Wing *et al*, 1973); and, thirdly, observer-rated scales. The first two methods are both time-consuming and impractical in screening large numbers of women, the majority of whom are well. Observer-rated scales are more practicable, but they too require some form of training in their application.

Self- and observer-rated scales correlate but do so incompletely as they often measure different variables. However, in the context of puerperal depression, Cox *et al* (1987) appear to have produced a useful self-rated questionnaire. They have devised the ten-item Edinburgh Postnatal Depression Scale (EPDS) as a screening tool. The advantages of such a tool are obvious in that it is a self-report scale and by design can be used by a variety of community health workers. The scale does not replace full psychiatric assessment, but defines a population which needs further evaluation.

In developing their questionnaire, Cox *et al* used two forms of self-report questionnaire on several occasions during pregnancy and the puerperium in a sample of 425 child-bearing women. They compared the Scale for Anxiety and Depression (SAD) of Bedford & Foulds (1978) and their own visual analogue scales. Depression, anxiety and tearfulness on the visual analogue scales were significantly greater one week after delivery than in assessments at other times (during pregnancy, and at 12 weeks and 23 weeks after childbirth). The SAD failed to detect any such change in depression or anxiety, and its validity during pregnancy was also not satisfactory. It was selected by Cox *et al* for their study in preference to other scales because of its separate subscale for anxiety and depression, few somatic features and its relative brevity.

In the study which provided the data reported here, the main objective was to identify major depressive disorder in order to examine its possible association with post-partum autoimmune thyroid dysfunction and steroid hormone levels (Fung *et al*, 1988). Although the primary aim of the study was not to examine the ability of various questionnaires to identify post-natal depression, we are able to report a comparison of the EPDs with another self-report questionnaire, the Beck Depression Inventory (BDI), in their abilities to identify major depressive disorder. The BDI (Beck *et al*, 1961) consists of 21 questions concerned with depressive symptoms and has been found to correlate significantly with the Hamilton observer-rated scale for depression (Hamilton, 1960). The BDI is subject-rated and has been widely used as a screening instrument for depression. Recent studies have examined its use in medical out-patients (Nielsen & Williams, 1980), in psychiatric out-patients presenting with depression (Harris *et al*, 1984), and in a population of medical students (Zoccolillo *et al*, 1986). It has also been used to identify depression in the puerperium by O'Hara *et al* (1983), but it was found to be unsatisfactory because of its low specificity.

The Montgomery–Asberg Depression Rating Scale (MADRS; Montgomery & Asberg, 1979) was also used in the study reported here. It is composed of ten items concerned mainly with psychic symptoms of depressive illness. Its relative lack of assessment of biological features should make it useful in the post-partum period. Each item is graded 0–6, and this scale is very sensitive to treatment response. Such sensitivity to change should, again on theoretical grounds, make it useful in late pregnancy and the first post-natal year, when changes in mood may be marked.

The Raskin 3 Area Scale for Depression (Raskin *et al*, 1970) was also used. Paykel *et al* (1980) report on its use in a study of 120 mothers at six weeks after delivery. The scale has three components: a verbal report of depressed feelings, worthlessness etc.; observed depression at interview; and secondary symptoms of depression, including insomnia, anorexia and poor concentration.

## Method

Over the course of one year, 147 mothers were assessed at the Caerphilly Miners' Hospital in South Wales. They consisted of 65 antibody-positive women (microsomal and thyroglobulin) and 82 antibody-negative women. These were part of a larger population being studied for post-partum thyroid dysfunction (Fung *et al*, 1988). They had been seen by the physicians at monthly intervals during pregnancy, and also in the post-delivery ward.

The women had originally presented as routine bookings for delivery at the hospital, and had a mean gestation of 16 weeks at presentation. They were unselected in terms of marital, socio-economic and medical problems, apart from the fact that women with thyroid disorder other than positive antibody status were excluded from the study.

The psychiatric assessment was at a six weeks routine post-natal follow-up clinic, and the psychiatrist was unaware of the antibody status of the women. The mental state of each mother was assessed according to DSM–III criteria for major depression (American Psychiatric Association, 1980) by an experienced psychiatrist between 13.30 h and 15.00 h, and then the Raskin 3 Area Scale for Depression and the Montgomery–Asberg Depression Rating Scale were completed. The whole interview took approximately 40 minutes. Subjects were asked to complete the Edinburgh Postnatal Depression Scale in the clinic, followed by the Beck Depression Inventory. These completed scales were taken home and returned by post. Subjects also completed the Middlesex Hospital questionnaire and Eysenck Personality Inventory (to be reported in a separate paper).

The majority of women were assessed in the clinic, but 49 had afternoon visits at home because of non-attendance. After assessment, each participant was informed that a sum of £2 would be sent by post on receipt of the questionnaires (and saliva samples for a separate study).

Various cut-off points have been suggested for the BDI, but there is no clear agreement from the literature in this regard. We have taken the cut-off point of 11 and over suggested by Nielsen & Williams (1980) as being appropriate when the inventory is used as a screening instrument. This cut-off point defines the lower limits of mild depression, but in an attempt to improve the BDI's performance we have also examined the use of 13 and over (Cavanaugh, 1983) and 21 and over (Cavanaugh *et al*, 1983).

The cut-off point used for the EPDs was 13 and over (Cox *et al*, 1987), 8 and over for the Raskin Scale (Paykel *et al*, 1980), and 12 and over for the MADRS – Snaith *et al* (1986) have shown that mild depression scores between 7 and 18, and a cut-off point of 12 represents the mid-point of the range.

## Results

The age range of the population was 17–40 years ($n = 147$, mean 24.6 years, s.d. 5.5), with a parity of one to five (49 primigravida, 98 multigravida). At six to eight weeks, 29 mothers were breastfeeding their babies, and 32 were taking the contraceptive pill.

The deliveries of 138 mothers were vaginal deliveries of normal infants; nine mothers had Caesarean sections. No mothers had stillborn or severely handicapped babies.

All the 147 mothers were assessed clinically and scored on the observer-rated scales. These were 21 women who did not return one or both of the self-rated questionnaires, resulting in differing compliance rates.

DSM–III criteria for major depressive disorder were met by 22 women (15%). The majority of these had mild depression, but six were referred to their GPs for further treatment. In addition, there were other depressive states such as 'dysthymic disorder' and 'adjustment disorder with depressed mood', as well as situations where depressive symptoms were present but not of sufficient severity to meet criteria for major depression. No attempt was made to place

TABLE I

*Sensitivity and specificity of four questionnaires in identifying subjects with major depressive disorder, according to DSM-III criteria*

| *Questionnaire* | *Number completing test* | *Major depression* | *Sensitivity*[1] | *Specificity*[2] | *'Other depression'* | *Identification of EPDS 'cases'* |
|---|---|---|---|---|---|---|
| EPDS | 126 | 21/22 | 95% | 97/104: 93% | 6/13 | – |
| BDI | 129 | 13/19 | 68% | 97/110: 88% | 5/13 | 17/25 |
| Raskin | 146 | 22/22 | 100% | 109/125: 87% | 9/15 | 25/28 |
| MADRS | 147 | 20/22 | 91% | 118/124: 96% | 2/15 | 20/28 |

1. Percentage of genuine cases identified.
2. Percentage of genuine non-cases identified.

these in diagnostic categories, since the main objective of the study was to examine hormonal parameters in the context of major depression. They are referred to as 'other depression' (Table I).

The individual performance of each scale in identifying depression, in terms of percentage of the population above the predetermined cut-off point, was as follows: EPDS 22%, BDI 19%, MADRS 17%, and Raskin 25%. Misclassification rates for the questionnaires were 6.3%, 14.7%, 5.5%, and 10.8% respectively, i.e. in terms of individuals who did and did not meet criteria for major depression.

Table I illustrates the ability of the four rating scales to identify subjects with major depression.

Out of a total of 22 subjects with major depression, the EPDS identified 21, giving it a sensitivity of 95% (i.e. the percentage of genuine cases identified). There were seven false positives, giving it a specificity of 93% (i.e. the percentage of genuine non-cases identified). Four of the false positives were 'other depression'. Lowering the cut-off point of the EPDS to 10 and over (a possibility suggested by Cox *et al*, 1987) resulted in a sensitivity of 100% but a lowered specificity of 82% (19 false positives, 11 of which fell into the category of 'other depression').

The BDI identified 13 of 19 subjects with major depression (sensitivity 68%) and had 13 false positives (specificity 88%), indicating a poorer performance than the EPDS. Raising the cut-off point lowered the sensitivity further. At 13 and over (Cavanaugh, 1983) the sensitivity was 63% (12/19) and the specificity 92%, while at 21 and over the sensitivity was 32% (6/19) and the specificity 99%. All of these results with the BDI are clearly unsatisfactory because of the high percentage of false negatives – i.e. missed cases of post-natal depression.

TABLE II

*Major intercorrelations between the depression rating scales (Pearson correlation matrix)*

| | *EPDS* | n[1] | *Raskin* | n[1] | *MADRS* | n[1] |
|---|---|---|---|---|---|---|
| BDI | 0.68* | 110 | 0.62* | 129 | 0.61* | 128 |
| EPDS | – | – | 0.80* | 126 | 0.79* | 125 |
| Raskin | – | – | – | – | 0.92* | 146 |

1. Number of mothers assessed.
*$P<0.001$.

The results were also analysed using the Pearson correlation matrix. Results are summarised in Table II. The intercorrelations between the Edinburgh Raskin and Montgomery–Asberg scales were very highly significant, as expected. The association of the Beck scale with the other three questionnaires was also significant, but less so.

## Discussion

Many studies have shown that depressive illness occurs at a high rate in the year following delivery, and the figure of 15% for major depression reported here is similar to that reported in other studies (Paykel *et al*, 1980).

Clinical diagnoses were based on DSM-III criteria for major depression, which requires dysphoric mood or loss of interest or loss of pleasure, together with four other required symptoms. The diagnosis of major depression thus obtained is similar to but less strict than that obtained by the Research Diagnostic Criteria (RDC) for major depressive disorder (Spitzer *et al*, 1978), which were used by Cox *et al* (1987) in devising the EPDS. The RDC also allow for 'definite', 'probable' and 'minor' depressive disorder according to severity. This is not the case with DSM-III, and in those instances where insufficient depressive symptoms were present or where other depressive diagnoses such as dysthymic disorder were made, we categorised the states as 'other depression'.

The features of neurotic depression in the puerperium have been described by Pitt (1968) as 'atypical', and include depression varying from day to day, tending to worsen in the evenings, and associated with fatigue, irritability (especially towards the spouse and any other children), disturbance of appetite (usually anorexia), early insomnia and loss of libido.

Some of the symptoms of post-natal depression are probably shared by many 'normal' puerperal women caring for a newborn infant. For example, the demands of regular feeding, 'baby colic', nappy changes, etc. may lead to sleepless nights and irregular food intake. A problem therefore arises when screening and attempting to identify 'cases' since most depression rating scales give importance to such somatic symptoms. The BDI, for example, gives prominence to lassitude, insomnia and loss of appetite, although these features occur commonly in all illnesses, both physical and mental. Also, as previously stated, these features occur in a large number of normal mothers in the post-natal period, rendering such scales less useful in this context.

Furthermore, as far as depression in general is concerned, Snaith (1987), in discussing the use of rating scales and their essential elements, suggests that the symptom of anhedonia (the loss of the ability to feel or experience pleasure) is the central and most reliable feature of mild depression.

The EPDS was devised from the earlier work of Snaith *et al* (1978) and concentrates on the 'psychic' aspect of depression in the puerperium, containing within it a rating for anhedonia. Its only rating of a biological nature is for 'difficulty sleeping', and clinical experience supports this, since non-depressed mothers are normally able to get to sleep easily even though nights may be disrupted by feeding. The reported sensitivity here of 91% confirms that it is a reliable instrument for screening for post-natal depression. Lowering the cut-off point to 10 and over (a possibility suggested by Cox *et al* (1987)) results in identification of all of our major depression, but lowers the specificity of the EPDS to 82%. However, of the 19 false positives, 11 were 'borderline depressives' and would obviously need further assessment.

Using a cut-off point of 11 and over as suggested by Nielsen & Williams (1980), the BDI showed a sensitivity of 68%, i.e. missing 6 of 19 cases of major depression – a serious deficiency. One-third of its questions concern somatic aspects of depression such as weight loss, features which are obviously less relevant in the context of puerperal depression. Kearns *et al* (1982) have compared the MADRS, the Hamilton, the BDI and the depression subscale of the Wakefield Inventory in patients suffering from depression of sufficient severity to lead to hospital admission. The last two scales had an overall poor performance and the authors recommended discontinuing the use of these particular scales in research. The work reported here supports this finding and the low sensitivity of the BDI makes it unacceptable as a screening instrument for identifying major depression in the puerperium.

In a study seeking primarily to examine the ability of observer-rated scales to identify depressive disorder, as an independent criterion, diagnosis of the disorder would ideally be carried out by an observer independent of the one rating the scales. Bearing in mind that this was not the case in the study reported here, the results obtained for the two observer-rated scales should be taken with caution.

The Raskin scale was chosen for use in this study because it had been used in a previous major work on post-natal depression (Paykel *et al*, 1980). It was originally designed as an observer-rated scale for use in monitoring changes in depression occurring with treatment (e.g. response to antidepressant medication). It does not contain an assessment of the subject's "lack of ability to enjoy" (anhedonia) and in this respect differs from the EPDS and MADRS. As far as Snaith is concerned it therefore omits the essential feature of depression (Snaith, 1987). However, it identified all of the subjects with major depression (sensitivity 100%), but its specificity was lower (89%) in that it identified 16 false positives.

The Montgomery–Asberg scale gives some importance to physical symptoms, but is mainly orientated towards psychic symptoms of depression, including apparent and reported sadness, inner tension, impairment of concentration, inability to feel, anhedonia, pessimism and suicidal ideation. Its overall performance is good, possibly because of the relative lack of emphasis on somatic symptoms, since of its ten questions, one deals with appetite and one deals with sleep.

The Edinburgh Postnatal Depression Scale was specifically designed to screen for depression in a community sample, and we have shown that there is a highly significant correlation between the EPDS and two observer-rated scales for depression, both of which have been used extensively in screening for depression in community samples. The value of the EPDS can be increased still further by lowering the cut-off point to 10 and over. In conclusion it can be stated that the EPDS is a valuable screening test which performs as well as two observer-rated scales, and better than the patient-rated Beck Depression Inventory. It is confirmed that the latter is unsuitable as a screening instrument for post-natal depression.

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# Maternal Depression and the Emotional Development of the Child

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Ninety-two women and their first-born children took part in a longitudinal survey of maternal mental health. When the children were four years old, their mothers were interviewed by means of the Behavioural Screening Questionnaire, and the children's problems were rated by a psychiatrist, who was unaware of the mothers' psychiatric histories or of assessments of their current health. As expected, mothers who were concurrently depressed reported significantly more behavioural difficulties in their children. Marital disharmony during pregnancy and a history of paternal psychiatric problems were also associated with later childhood behavioural difficulties. Children who scored below average on the McCarthy scales of cognitive abilities were also reported by their mothers to have more behavioural problems, but the children's behavioural difficulties at four showed no clear links with post-natal depression.

While it is accepted that a child's emotional and intellectual development is strongly influenced by his/her early relationship with the parents, in particular the mother, the precise role played by parental psychiatric disturbance in the establishment and perpetuation of a child's abnormal behaviour is more uncertain. Earlier studies (see Rutter, 1966) assumed a direct relationship between parental and child disability, but more recently (Billing & Moos, 1983; Rutter & Quinton, 1984) it has been suggested that the link may be made through the disturbed family relationships consequent upon the parental psychiatric illness. Rutter (1985) cites four possible mechanisms underlying links between parental psychiatric disorder and childhood behaviour disturbance, viz. genetic, a direct environmental impact of parental mental illness, an indirect effect of parental mental disorder, and the ill effects on the children deriving from correlates of parental mental illness rather than from the disorder itself. In the last respect, he refers to the frequency with which mental disorder is associated with marital discord, which often antecedes the psychiatric condition. It is suggested that most evidence supports an indirect association, with something like marital discord mediating the link. Furthermore, there is little evidence to support the notion that there is a greater effect of family influences during the first year of a child's life than at other times.

Mothers of pre-school-aged children show a higher frequency of emotional disturbance (Brown & Harris, 1978; Richman, 1978), and there is a well recognised association between maternal depression and concurrent behavioural abnormalities in two- and three-year-old children (Richman *et al*, 1975; Mills *et al*, 1985; Pound *et al*, 1985). Social disadvantage, the gender of the child, young siblings, marital discord, and parental personality disorder have all been suggested as significant factors in the link between maternal depression and childhood behavioural disorder (Rutter *et al*, 1975*a*,*b*; Cooper *et al*, 1977; Rutter & Quinton, 1984).

Despite an awareness that childbirth represents a period when women are at high risk for psychiatric disorder (Brockington & Kumar, 1982), there have been few studies of the long-term sequelae for the children of mothers who have experienced post-partum psychotic or neurotic depression. Weissman *et al* (1972) showed that about three-quarters of the children of depressed mothers were emotionally or behaviourally disturbed. Richman (1978) found an association between mild to marked depression in mothers and behavioural disturbance in their three-year-old children, and also noted that the disturbed behaviour and maternal depression tended to be concomitant. Some of these findings were confirmed by Ghodsian *et al* (1984). Uddenberg & Englesson (1978) showed an association between an abnormal post-natal maternal mental state and disturbed behaviour in children aged four and a half years, although both the mental state of the mothers and the behavioural disturbance of the children were idiosyncratically defined.

More recently, Ghodsian *et al* (1984) showed that child behavioural problems at 27 and 42 months tended to be related in an interactive way with concurrent maternal depression and depression at 14 months post-natally. Wrate *et al* (1985) found no relationship between a prolonged post-natal maternal depression and behavioural disturbance in three-year-old children, although children whose mothers had brief post-natal depressive episodes showed more behavioural disturbance than those whose mothers had not been depressed.

It seems likely that even if maternal depression as such does not lead to behavioural disorder in three- or four-year-old children, it may exert an effect on parent–child interaction and attachment. A depressed mother is less likely to stimulate her child actively through play and conversation, to respond to a child's signals, or to teach the child specific skills, all of which are important influences on a child's early development (Herbert *et al*, 1982; Livingood *et al*, 1983; Mills *et al*, 1985).

We report the results of a longitudinal study on the mental health and social circumstances of 119 first-time mothers, from early pregnancy to four years post-partum. The cognitive development of the children has been reported elsewhere (Cogill *et al*, 1986). This report refers to measures of behavioural disturbance in the children.

## Method

The four-year-old children were seen with their mothers, and behavioural and emotional disorders were assessed by means of the Behaviour Screening Questionnaire (BSQ; Richman & Graham, 1971), a structured interview of proven reliability and validity which is a sensitive determinant of child psychiatric disorder in whole population studies and in in-patients attending child psychiatric clinics. The mothers were interviewed by a child psychiatrist, who inquired about the child's eating, sleeping, soiling, habits, temper tantrums, dependency, worries, fear, activity, concentration, relationships with peers and siblings, and relative ease of management.

Of a consecutive series of 119 first-time mothers attending the obstetric clinic of a London teaching hospital, 99 women were investigated when their children were four years old. Seven of these mothers were unable or unwilling to participate in this part of the investigation. Only women who spoke adequate English, lived with a husband or partner, and who 'booked' obstetric care by the 14th week of pregnancy were included in the original survey; the methodology of assessment of the mothers is described elsewhere (Kumar & Robson, 1984). Each mother was clinically assessed at intervals by a psychiatrist using a standardised semistructured interview, and for the purposes of this study the children of women who were rated as 'cases' of depression at different stages of the study were compared with the rest of the sample, i.e. during the whole of pregnancy, up to three months post-partum, from delivery to 12 months post-partum, and at four years. Information was available from the original survey about the mothers' personal and family psychiatric history, and that of the fathers, their social class, and the mothers' educational achievements. The quality of the marital relationship was assessed during pregnancy and again when the child was four years old. An operational definition of 'past psychiatric history' was employed, viz. a course of treatment from the family doctor or specialist for nervous or emotional problems. Obstetric and paediatric case notes were scrutinised and a score compiled reflecting the degree of risk to the neonate's health according to the method of Prechtl (1967); one set of case notes was not available and for this measure there were 91 subjects. Hypotheses about factors which might adversely affect the children's behaviour were formulated, and predictions were examined using $\chi^2$ tests and parametric analyses.

## Results

Predictions about individual associations with increased child behavioural problems were tested by comparing the children's BSQ scores as a function of selected variables, such as the presence or absence of maternal depression at particular times in the child's life, the child's gender, parents' social class, etc. (Table I). Mothers who were clinically depressed at the time they were interviewed about their children, described significantly more behavioural and emotional problems in them. Maternal depression at other times in the child's life bore no significant relationship to increased child behavioural difficulties, although the presence of post-natal depression early on (0–3 months) tended to do so. Women whose marriages were characterised by disharmony and conflict, and those whose partners had previous psychiatric problems, also reported more problems in their children; our previous research (Kumar & Robson, 1984) had shown that post-natal depression was itself closely related to these factors, and we, therefore, also examined potential interactions between antecedent variables by means of multivariate analyses.

Neither log nor square-root transformation of the BSQ scores made any material difference to the results, and analyses of untransformed scores are therefore presented. The relatively small size of the sample also rendered it impractical to look for the influence of maternal depression at different times, for example by comparing the presence of maternal depression during a given period with the group of women who had no history of depression up to that time. Parametric comparisons of children's BSQ scores are not the usual method of analysis, because in clinical practice a threshold score of 10 is used as a clinically significant index of behavioural disturbance (Richman & Graham, 1971). The child psychiatrist had rated 14 of the 92 children as scoring 10 or more on the BSQ, and categorical subdivision into groups of children scoring 0–9, or over 10 enabled us to examine by means of $\chi^2$ tests what factors were associated with clinically significant levels of behavioural disturbance in the children. Links were found with concurrent ($P<0.02$) but not post-natal depression, with marital conflict during pregnancy ($P<0.05$), and with a positive paternal psychiatric history ($P<0.001$). These results were, therefore, entirely consistent with the univariate parametric analyses, and suggest that no new or additional antecedent influences are evident when one tests the upper end of severity of child behavioural disturbance.

TABLE I
*Relation between children's behavioural disturbance and selected 'predictor' variables*

| *'Predictor' variable* | *No. of subjects* | *Children's BSQ scores (s. e.)* |
|---|---|---|
| *Maternal psychiatric disturbance* | | |
| Past psychiatric history | | |
| No | 62 | 5.74 (0.39) |
| Yes | 30 | 5.57 (0.66) |
| Depression in pregnancy | | |
| Absent | 73 | 5.58 (0.37) |
| Present | 19 | 6.11 (0.78) |
| Post-natal depression (0–3 months) | | |
| Absent | 77 | 5.43 (0.34) |
| Present | 15 | 7.00 (1.02)* |
| Post-natal depression (0–12 months) | | |
| Absent | 70 | 5.41 (0.36) |
| Present | 22 | 6.55 (0.81) |
| Concurrent depression (at 4 years) | | |
| Absent | 84 | 5.44 (0.34) |
| Present | 8 | 8.25 (1.31)** |
| *Other 'predictor' variables* | | |
| Sex of child | | |
| Girl | 50 | 5.40 (0.42) |
| Boy | 42 | 6.02 (0.55) |
| Social class | | |
| 1-3N | 72 | 5.43 (0.38) |
| 3M-5 | 20 | 6.60 (0.69) |
| Maternal education | | |
| O levels | 41 | 5.66 (0.46) |
| A levels | 51 | 5.71 (0.48) |
| Prechtl Index | | |
| 0–6 | 68 | 5.65 (0.42) |
| 7+ | 23 | 5.74 (0.53) |
| Marital conflict (pregnancy) | | |
| Present | 13 | 7.69 (1.26) |
| Absent | 79 | 5.35 (0.32)** |
| Marital conflict (4 years) | | |
| Present | 19 | 6.84 (0.93) |
| Absent | 73 | 5.38 (0.34)* |
| Husband's psychiatric history | | |
| Present | 10 | 8.30 (1.40) |
| Absent | 82 | 5.37 (0.32)*** |

*$P<0.1$, **$P<0.05$, ***$P<0.01$ (d.f. 1, 90).

TABLE II
*Stepwise multiple-regression analysis with children's BSQ scores as dependent variable*

| *Independent variables* | *Variance accounted for* | *F* | *d.f.* | P |
|---|---|---|---|---|
| Husband's psychiatric history | 28.5% | 7.98 | 1,90 | <0.005 |
| + Marital conflict in pregnancy | 35.5% | 6.43 | 2,89 | <0.002 |
| + Maternal depression when child aged 4 | 40.5% | 5.75 | 3,88 | <0.001 |

Stepwise multiple-regression analyses (SPSS, 1983) were then carried out in which the children's BSQ scores were taken as the dependent variable. Three of the factors listed in Table I were found to exert a significant effect, and together they accounted for 40.5% of the overall variance. These factors were a history of psychiatric problems in the husbands, marital conflict during pregnancy, and concurrent maternal depression (i.e. at four years) (Table II). Maternal depression at other times did not add significantly to the effect of these variables, nor did any of the other potentially relevant antecedent variables, such as child's gender, parent's social class, mother's educational attainment, or perinatal and obstetric hazard (Prechtl Index scores).

## Discussion

These results point to an expected relationship between *concurrent* maternal depression and behavioural disorder in the child at age four, and they are consistent with the findings of others (c.f. Richman *et al*, 1975; Cox *et al*, 1987).

An association has previously been reported by us (Cogill *et al*, 1986) between maternal post-natal depression and poorer cognitive ability of the children at four. Moreover, mothers were more likely to report behavioural problems in children of poorer cognitive ability ($P<0.05$), and there was an inverse correlation between the children's scores of cognitive ability and the psychiatrist's rating of behavioural disturbance ($r=0.37$, d.f. 90, $P<0.001$). However, these patterns and the patterns of associations between potential antecedent variables and later behavioural problems as reported here show some important differences, suggesting that while there may be some overlap, there may also be subtle differences in the ways that cognitive and behavioural problems in children are mediated. Thus there was a suggestion of a similar association between early post-natal depression and later behavioural problems in the children, but the multiple-regression analyses showed that the primary links were with factors which we had previously shown to antedate post-natal depression, viz. conflict in the marriage and reports by the mothers during pregnancy that their spouses had previously consulted for psychiatric difficulties (Kumar & Robson, 1984). Women who reported conflict in the marriage during pregnancy were also more likely to report similar conflict when the child was aged four ($\chi^2=6.15$, d.f.1., $P<0.05$). The presence of maternal depression may reflect or cause greater marital problems, but either way one consequence of such a combined effect is a detrimental influence on the child's behaviour (Quinton & Rutter, 1985). The correlation between lower scores on psychological tests such as the McCarthy scales and higher ratings on behavioural problems in the children is not a new finding (e.g. Richman *et al*, 1982). It may be that children with relatively lower cognitive abilities are more difficult for their mothers to handle. Alternatively, a depressed mother may have problems in relating to her child, who consequently becomes 'difficult' and less amenable to stimulation, resulting in relatively lower cognitive ability.

Recent studies (Emery, 1982) have suggested that it is family discord (and hostility) which largely accounts for the relationship between parental psychiatric disorder and disturbance in the child. Our own results are consistent with this view. Maternal depression *per se* may contribute to the occurrence of disturbed behaviour in the child, but other associated factors, which constitute an important part of the child's environment, appear to exert more powerful effects. One way of encapsulating the problem is to consider the possibility of a woman married to a vulnerable, disturbed spouse becoming depressed after childbirth. The two may well have been involved in marital conflict before the birth of the child, and this may continue or become exacerbated, resulting in disturbed behaviour in the child, particularly if he/she also shows signs of falling behind cognitively.

Considerable evidence attests to the high frequency of clinical depression in women following childbirth (Pitt, 1968; Weissman *et al*, 1972; Kumar & Robson, 1984) and if, as our study indicates, the association with family discord and paternal psychiatric illness contributes to deleterious effects on the emotional, behavioural, and cognitive development of the children, then the early detection and treatment of maternal depression is important, not only to relieve distress in the mothers and their spouses, but also, perhaps, to prevent disturbance in the children. Successful prevention is more likely to be achieved if fathers as well as mothers are included in the therapeutic work.

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# The Effects of Childhood Parental Death and Divorce on Six-Month History of Anxiety Disorders

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Duke Epidemiologic Catchment Area (ECA) data were used to examine the relationships between: (a) early childhood maternal death, paternal death, and parental separation/divorce, and (b) six-month DIS/DSM-III diagnoses of agoraphobia with and without panic attacks, simple phobia, social phobia, panic disorder, generalised anxiety disorder, and obsessive-compulsive disorder. Associations were found between: (a) maternal death and agoraphobia with panic attacks, and (b) parental separation/divorce and agoraphobia with panic attacks and panic disorder. The associations could not be explained by the effects of potentially confounding socio-demographic factors.

The investigators sought to determine whether early childhood (before age 10) maternal death, paternal death, and parental separation/divorce are associated with increased rates of agoraphobia (with and without panic attacks), panic disorder, generalised anxiety disorder, simple phobia, social phobia, and obsessive–compulsive disorder. This question is important for both theoretical and practical reasons. Few studies have focused on the psychosocial aetiology of anxiety disorders. Determining whether these potentially traumatic childhood experiences are associated with increased rates of anxiety disorders would be a significant contribution. On a more practical level, community studies have found that between 10% and 25% of the population has a lifetime history of at least one anxiety disorder (Robins *et al*, 1984). Follow-up studies indicate that less than 25% of persons with these disorders recover (Breier *et al*, 1985). Parental separation/divorce is a very common exposure for today's children; Shamsie (1985) quotes an estimate that 30–40% of the children born in the 1970s will experience a parental divorce before they are 18.

The theoretical underpinning of empirical studies of the effects of parental death and divorce is the work of John Bowlby. Bowlby's (1977) attachment theory is:

> ". . . a way of conceptualizing the propensity of human beings to make strong affectional bonds to particular others and of explaining the many forms of emotional distress and personality disturbance, including anxiety, anger, depression and emotional detachment, to which unwilling separation and loss give rise." (p. 201)

Little is known about the risk factors for and developmental antecedents of anxiety disorders. Weissman & Merikangas (1986) report that anxiety disorders are most common among women, younger persons, and the less educated. Childhood separation anxiety has been hypothesised to be a developmental precursor to agoraphobia and panic disorder, but evidence to support this hypothesis is not strong (Thyer *et al*, 1986).

There have been four studies on the relationship of parental death and divorce to adult anxiety disorders. Coryell *et al* (1983) compared persons with panic disorders to persons with unipolar depression. Faravelli *et al* (1985) compared persons with agoraphobia and panic attacks to persons without a psychiatric diagnosis. Raskin *et al* (1982) compared persons with panic disorder to persons with generalised anxiety disorder. Torgersen (1986) compared persons with either agoraphobia with panic attacks or panic disorder to persons with generalised anxiety disorder. In all four studies, subjects met DSM-III criteria (American Psychiatric Association, 1980) for these anxiety disorders and had sought treatment for them. The Coryell study was done by chart review; in the other three studies, subjects were interviewed by the investigators.

The four studies are fairly consistent in finding parental death and divorce to be associated with anxiety disorders. Methodological limitations of the studies, however, prevent firm conclusions. Firstly, three of the studies used very small numbers of subjects, and consequently all but one of the associations failed to reach statistical significance. Secondly, all four studies used subjects who had sought treatment, whereas most persons who meet DSM-III criteria for anxiety disorders do not seek treatment (Shapiro *et al*, 1984); these studies, then, are sampling only a subset of the population with anxiety disorder. It is not clear that persons who seek treatment are similar, with respect to the relationships of interest here, to persons who do.

These two methodological limitations were avoided in this study. A large sample was used ($n = 3803$) and the population sampled included all residents, aged 18 and over, of a five-county area. In addition, this study examined associations between parental separation/divorce and a number of anxiety disorders that were not included in the four previous studies.

## Method

Data from the Duke Epidemiologic Catchment Area (ECA) project were used in the study. The ECA study was a multisite project designed to estimate the prevalence of and to identify socio-demographic risk factors for psychiatric disorders. Although the Duke ECA team sampled both community and institutional residents, this study used only the community sample. Sampling procedures for the community sample only are described here.

The population sampled was all persons 18 years of age and older whose usual residence was a non-institutional household in any of five counties (Durham, Vance, Granville, Franklin, and Warren) in the North Carolina Piedmont (Helzer *et al*, 1985). Durham County is a metropolitan area in the midst of the 'research triangle', an area that contains more than 500 000 people, three major universities, and a large high-technology industrial park (Blazer *et al*, 1985). Twenty-four per cent of the population has at least a college education, and the mean per capita family income is over $20 000. Vance, Granville, Franklin, and Warren counties, in contrast, are representatives of the rural southern United States. In the rural counties, 49% of the adult population have not completed high school, mean per capita income is less than $15 000, and the majority of the labour force are employed in unskilled or semi-skilled occupations.

The Duke ECA team used a multistage sampling procedure to obtain a representative sample of households (Helzer *et al*, 1985). First-stage sampling units (FSUs) were stratified according to county, race, rural/urban status, poverty status, and expected number of housing units. Secondary sampling units (SSUs) were randomly selected from a subset of FSUs in such a way that they were representative of the five-county region. An ECA team member then listed all buildings that were used as dwelling units in each SSU; this list was used to select at random approximately 13 individual housing units from each SSU.

An interviewer visited each household that had been selected, and made a roster of all eligible adults living there (Holzer *et al*, 1985). The interviewer then used a randomisation table to select one member from each household to be the potential respondent (Kish, 1965).

The overall response rate was 79% (Blazer *et al*, 1985). Interviewers could not obtain household rosters in 10% of the households sampled, and the identified respondent refused to be surveyed in 11% of the households. Of the 3921 interviews that were attempted (i.e. the 79%), 3803 were usable. The reasons why the other interviews could not be used were that the subjects could not respond for themselves, the interview was only partially completed, or the research team judged the information to be unreliable.

Respondents were given an interview that lasted an average of 130 minutes, with a range of 45 minutes to 4 hours. The interview was composed of two parts: (a) a series of socio-demographic and related questions; and (b) the Diagnostic Interview Schedule (DIS; Robins *et al*, 1979), an instrument designed to detect the presence or absence of psychiatric disorders under field conditions. Included in the interview were the questions "Did either of your parents die before you were ten? Was that your mother, your father, or both parents?" and "Were your parents divorced or separated before you were ten?"

Determination of whether or not respondents had had a history of any of the anxiety disorders within the previous six months was made with the DIS. The DIS is designed to be administered by interviewers who do not have clinical training. The DIS, a very structured interview, collects a history of specific symptoms, ascertaining: "their frequency and severity, their temporal clustering, whether they occurred in the absence of physical illness . . . that might account for them, and whether other psychiatric disorders were present that might account for them" (Robins *et al*, 1985, p. 144). All the symptoms necessary to make DSM-III diagnoses are included. A computer-based algorithm is used to determine whether the symptoms reported constitute a DIS/DSM-III clinical syndrome. The algorithm does *not* take the DSM-III exclusionary rules (i.e. the hierarchy of diagnoses) into account, primarily because recent information raises serious doubts about their utility (Boyd *et al*, 1984).

The Duke ECA team attempted to interview all their subjects twice, with the second interview coming approximately one year after the first. Of the 3803 people who gave usable interviews in the first wave, 2998 gave usable interviews in the second. This study used data from the first wave of interviews almost exclusively. Data on parental death/divorce, socio-demographic indicators, and the presence or absence of all the anxiety disorders but one came from the first wave; only data on the presence or absence of generalised anxiety disorder came from the second wave. (The DIS section measuring generalised anxiety disorder was not available at the time of the first interviews.)

A weighting procedure was used to adjust for any differences in selection among respondents resulting from the multistage-sampling design. The weighting procedure adjusted for probability of selection in the five-county area, non-response, and the probability of selection within households of different sizes. All the analysis in this paper are based on weighted data.

## Results

The demographic characteristics of the study sample are shown in Table I. The sample is demographically representative of the five-county sampling frame.

In analyses examining maternal death, all persons who reported that both their parents had died were excluded. An analogous exclusion was used in the analyses involving paternal death. In analyses that involved parental separation/divorce, persons who reported that their parents were never married were excluded. Persons for whom data concerning a particular diagnosis were missing were excluded from analyses that involved that diagnosis.

TABLE I
*Socio-demographic characteristics of Duke ECA sample*

| *Socio-demographic characteristic* | n | % |
|---|---|---|
| Total sample | 3803 | 100.0 |
| Age: years[1] | | |
| 18–24 | 688 | 18.1 |
| 25–44 | 1529 | 40.2 |
| 45–64 | 1034 | 27.2 |
| ≥65 | 551 | 14.5 |
| Sex | | |
| male | 1737 | 45.7 |
| female | 2066 | 54.3 |
| Race[1] | | |
| white | 2351 | 61.8 |
| black | 1446 | 38.1 |
| other | 5 | 0.1 |
| Marital status | | |
| married | 2242 | 59.0 |
| widowed | 357 | 9.4 |
| separated/divorced | 381 | 10.0 |
| never married | 823 | 21.6 |
| Education | | |
| <high school | 1437 | 37.8 |
| high school | 1074 | 28.2 |
| >high school | 1292 | 34.0 |

1. Total does not sum to 3803 because of missing data for one respondent.

The prevalence odds ratio (POR) was used as the measure of association in all analyses. The POR is the most appropriate measure to use in a cross-sectional study involving outcomes for which there is an extended period of risk (Kleinbaum *et al*, 1982). The POR is obtained in the following manner:

(a) multiply the number of persons both exposed (e.g. to maternal death) and disordered (e.g. agoraphobia with panic attacks) by the number of persons who are neither exposed nor disordered
(b) multiply the number of exposed persons without the disorder by the number of unexposed persons who have the disorder
(c) divide the product of the first step by the product of the second step.

For the relationship between maternal death and agoraphobia with panic attacks (see Table II), the calculation is $POR = (6 \times 3296)/(115 \times 25) = 6.9$. The POR estimates the risk of exposed persons being disordered divided by the risk of unexposed persons being disordered (Kleinbaum *et al*, 1982). Persons whose mother died, then, are 6.9 times more likely to be diagnosed as having agoraphobia with panic attacks than are persons whose mother did not die.

Table II shows the relationships between early childhood maternal and paternal death and six-month history of anxiety disorders. Persons whose mother died before they were ten were at increased risk for agoraphobia with panic attacks, and, to a much lesser degree, for simple phobia. Paternal death was not significantly associated with any of the anxiety disorders.

TABLE II
*Maternal and paternal death and six-month history of anxiety disorders*

| *Anxiety disorders* | *Maternal death* | *Paternal death* | *Neither died* | *POR maternal death* | *POR paternal death* |
|---|---|---|---|---|---|
| Agoraphobia with panic attacks | 6 | 0 | 25 | 6.9** | 0.3[1] |
| No agoraphobia with panic attacks | 115 | 213 | 3296 | | |
| Agoraphobia without panic attacks | 5 | 13 | 147 | 0.9 | 1.4 |
| No agoraphobia without panic attacks | 116 | 200 | 3174 | | |
| Panic disorder | 0 | 1 | 21 | 0.7[1] | 0.8 |
| No panic disorder | 119 | 214 | 3377 | | |
| Social phobia | 2 | 10 | 88 | 0.6 | 1.8 |
| No social phobia | 118 | 203 | 3234 | | |
| Simple phobia | 21 | 34 | 387 | 1.6* | 1.4 |
| No simple phobia | 100 | 179 | 2936 | | |
| Obsessive–compulsive disorder | 1 | 7 | 74 | 0.4 | 1.5 |
| No obsessive–compulsive disorder | 120 | 208 | 3331 | | |
| Generalised anxiety disorder | 6 | 9 | 81 | 1.9 | 1.8 |
| No generalised anxiety disorder | 99 | 156 | 2576 | | |

1. 0.5 added to each cell in calculating POR due to presence of a zero cell in original data.
* $P<0.05$ Fisher's exact test.
** $P<0.01$ Fisher's exact test.

Table III shows the relationships between early childhood parental separation/divorce and six-month history of anxiety disorders. Persons whose parents separated or divorced before they were ten were at increased risk of agoraphobia with panic attacks and panic disorder. However, it is important to note that most respondents whose parents separated/divorced did not have these disorders. Eight of 340 persons (2.4%) whose parents divorced/separated had agoraphobia with panic attacks; 11 of 340 (3.2%) had panic disorder. The same pattern is observed for the association between maternal death and agoraphobia with panic attacks.

Because DSM – III exclusionary rules were not used in assigning diagnoses, the investigators were concerned that the relationships between parental separation/divorce and both agoraphobia with panic attacks and panic disorder might be predominantly due to diagnostic overlap. It was found that of the 31 persons who had agoraphobia with panic attacks and the 22 persons who had panic disorder, 12 persons had received both diagnoses. The association with parental separation/divorce, however, was stronger in persons with only one of the diagnoses than in persons with both. Diagnostic overlap was not, therefore, a factor.

The investigators were also concerned that the three strongest associations found in this study (maternal death and agoraphobia with panic attacks; parental separation/divorce and agoraphobia with panic attacks and panic disorder) may have been confounded by socio-demographic characteristics. To examine this issue, the investigators examined each of the three relationships in analyses stratified by sex, marital status, race, rural/urban residence, education, and age. The relationship between maternal death and agoraphobia with panic attacks, for instance, was examined separately in men and women. Each time a relationship was stratified by a socio-demographic characteristic, the Mantel–Haenszel method was used to calculate a POR adjusted for that characteristic (Rothman, 1986, p. 195). The adjusted PORs were all quite similar to the PORs from the crude analyses; there was, therefore, no evidence of confounding.

TABLE III

*Parental separation/divorce and six-month history of anxiety disorders*

| *Anxiety disorders* | *Parental separation/ divorce* | *No parental separation/ divorce* | *POR* |
|---|---|---|---|
| Agoraphobia with panic attacks | 8 | 23 | 3.4* |
| No agoraphobia with panic attacks | 332 | 3275 | |
| Agoraphobia without panic attacks | 11 | 152 | 0.7 |
| No agoraphobia without panic attacks | 330 | 3146 | |
| Panic disorder | 7 | 15 | 4.5* |
| No panic disorder | 346 | 3351 | |
| Social phobia | 14 | 84 | 1.6 |
| No social phobia | 327 | 3214 | |
| Simple phobia | 50 | 388 | 1.3 |
| No simple phobia | 291 | 2911 | |
| Obsessive–compulsive disorder | 9 | 74 | 1.2 |
| No obsessive–compulsive disorder | 343 | 3300 | |
| Generalised anxiety disorder | 12 | 84 | 1.4 |
| No generalised anxiety disorder | 269 | 2550 | |

* $P < 0.01$ Fisher's exact test.

## Discussion

The main findings of this study were: (a) a positive association between early childhood maternal death and agoraphobia with panic attacks and (b) positive associations between early childhood parental separation/divorce and agoraphobia with panic attacks and panic disorder. These associations were not due to the confounding effects of socio-demographic factors. These findings are especially impressive in that childhood parental losses were significant risk factors for *recent* (within six months) anxiety disorders.

The investigators place considerable confidence in these findings. The level of statistical significance of these associations ($P < 0.01$ or higher) make chance an unlikely explanation. The response rate of 79% and the weighting procedure make selection bias an unlikely explanation. Information bias concerning exposure is unlikely when something as objective as presence or absence of parental separation/divorce is being measured. Information bias concerning the outcome is also an unlikely explanation for the results. The concordance of the DIS with diagnosis by a psychiatrist for agoraphobia with panic attacks, panic disorder, and social phobia has been found to be low to moderate (Anthony *et al*, 1985; Helzer *et al*, 1985). Robins (1985), however, has pointed out that it may not be appropriate to use diagnosis by a psychiatrist as a measuring stick against which to judge the DIS; the recognition that clinical diagnoses were often unreliable was the main impetus for the development of structured interviews.

Even if credence is placed in using diagnosis by psychiatrist to judge the DIS, the associations found in this study are still valid. Although the sensitivity of the DIS was low (using diagnosis by psychiatrist as the gold standard), the specificity was quite high. When studying the association between a relatively rare disorder and a possible risk factor, specificity is more important than sensitivity (Copeland *et al*, 1977).

The only previous study comparing parental death and divorce in persons with and without an anxiety disorder was done by Faravelli *et al* (1985), who examined agoraphobia with panic attacks. In that study, the odds ratio (OR) for the association between parental death and agoraphobia with panic attacks was 3.5 (statistically significant). (Faravelli *et al* did not present ORs in their paper, but ORs can be calculated from information they presented.) This study found a POR of 6.9 for maternal death (statistically significant) and a POR of 0.3 for paternal death (not statistically significant). Faravelli *et al* found an OR of 8.8 for parental separation/divorce and agoraphobia with panic attacks; this study found a POR of 3.4. Considering the methodological differences between the two studies (e.g. hospital-based case-control v. community-based cross-section, psychiatric diagnosis v. DIS diagnosis, different cultures, and different definitions of exposures), the findings are remarkably consistent.

What explanations are possible for the associations observed in this study? It may be that the profound changes in parent–child bonds and in family structure caused by parental separation/divorce and maternal death are the responsible factors. This chain of events would be consistent with Bowlby's (1977) attachment theory.

A second possible explanation is that parental separation/divorce is a marker for exposures that occurred before the separation/divorce (it is difficult to make a similar argument for maternal death). Genetic factors would be one example of such an exposure; a parental genetic predisposition for anxiety disorders might contribute both to the parents' separation/divorce and to the subject's anxiety disorder. Other factors may be poor pre-separation/divorce family dynamics, inability of one or both parents to form constructive relationships with significant others, and pre-separation/divorce economic hardship.

A third possible explanation for the associations found in this study is that post-divorce/maternal death strains were the important factors. One possible strain is a poor relationship with a step-parent; Heatherington *et al* (1985) report that 75–80% of divorcing adults re-marry. Another example of a potentially harmful post-divorce strain is a decline in the relationship with the custodial parent. Divorce, for instance, is a risk factor for depressive symptoms (Hirschfeld & Cross, 1982); it is easy to imagine how such symptoms would reduce the parent's parenting ability. Both parental divorce and maternal death may lead to the strain of economic hardship. In parental separation/divorce, another possible strain is a poor post-divorce relationship with the non-custodial parent.

It should be noted that the degree of specificity of the effects of maternal death and parental separation/divorce is unclear; these events may be risk factors for multiple psychiatric disorders. This study found parental death/divorce not to be a risk factor for several anxiety disorders. Roy (1981) found parental death not to be a risk factor for psychotic depression. On the other hand, Roy did find that separation from both mother and father due to parental divorce was a risk factor for major depressive episode without melancholia. Data on the relationships between parental death/divorce and other psychiatric disorders is lacking.

In DSM–III, agoraphobia with panic attacks was considered to be more like agoraphobia with panic disorder, and was thus classified as a subtype of agoraphobia. In DSM–III–R (American Psychiatric Association, 1987) agoraphobia with panic attacks (now called panic disorder with agoraphobia) was made a subtype of panic disorder, separate from agoraphobia. This study found agoraphobia with panic attacks to be more similar to panic disorder than to agoraphobia without panic attacks in its relationship to parental separation/divorce. The results of this study, then, are consistent with the new classification.

More research is needed on the relationship between parental separation/divorce and agoraphobia with panic attacks and panic disorder (the declining prevalence of maternal death makes further study of it more difficult and less important). Future case-control studies might include, for the cases, biological data such as lactate infusion tests and psychopharmacological response. This would allow for subgrouping of the cases and for determination of whether developmental factors, such as parental separation/divorce, are risk factors for only certain subgroups.

It would also be useful to replicate the findings of this study in samples of children and/or adolescents. Many investigators believe that school phobia and/or separation anxiety are precursors of agoraphobia with panic attacks and panic disorder; perhaps parental separation/divorce is also a risk factor for these disorders. If parental separation/divorce is a risk factor for certain anxiety disorders, perhaps other stressful childhood experiences (e.g. other changes in family structure, disruptions in parent–child bonds, traumatic events, etc.) are also risk factors.

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# A Follow-Up of Adolescents with Obsessive–Compulsive Disorder

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Twenty-six patients seen at a regional adolescent psychiatry unit between 1974 and 1979 with a discharge diagnosis of obsessive–compulsive disorder were followed up after an average of ten years. Of 24 subjects traced, outcome information was obtained from 20. At the point of follow-up, ten patients remained psychiatrically ill, six having persisting obsessive–compulsive symptoms. Poor outcome was associated with a family history of psychiatric illness and lack of response to therapy at initial contact. All patients who were asymptomatic at discharge had remained well.

Follow-up studies of patients presenting with obsessive–compulsive disorder (OCD) have described the long-term persistence of disabling symptoms in many cases (Black, 1974). Goodwin *et al* (1969), in a review of these studies in adults, summarised the data in terms of treatment status. Of those who received out-patient treatment, 60–80% were asymptomatic or improved one to five years later, whereas of those admitted to hospital only 33% were improved at follow-up. They suggest that between 5% and 10% of patients follow a chronic course often marked by progressive decline. Good outcome was associated with mild symptoms, short duration, and good pre-morbid personality, including the absence of childhood disturbance. Rasmussen & Tsuang (1984) reviewed nine recent studies of the outcome of behavioural treatment of adults with OCD. The proportion asymptomatic in follow-up periods of less than two years ranged between 50% and 67%.

Several studies have noted the onset in adolescence or childhood of symptoms persisting into adulthood in a significant proportion of patients (e.g. Pollitt, 1957; Kringlen, 1965) with consequent pessimism about the long-term outlook in cases of early onset. Berman (1942), following up six OCD patients among 3050 childhood admissions, found two to be schizophrenic, one still to be suffering with severe OCD symptoms, and three to be free of symptoms. Warren (1965) reported the outcome for 15 OCD patients among 187 patients admitted to an adolescent unit. At least six years after admission, five remained seriously handicapped with OCD symptoms, four somewhat handicapped, four symptomatic under stress, and only two completely well. In a retrospective 1.5–14-year follow-up study of 17 children with OCD, Hollingsworth *et al* (1980) traced ten, who were between 12 and 30 years of age. Of these patients, seven continued to have symptoms of OCD and two of the remaining three had been treated for other psychiatric conditions.

There is limited information available about prognosis in terms of psychosocial adjustment in adulthood for adolescents presenting with OCD. Mawson *et al* (1982) found that decrements in social functioning in adult patients were related to the severity of symptoms and showed improvement when symptoms were treated. Probst *et al* (1979) examined the social adjustment of 25 patients whose OCD symptoms began in childhood and concluded that social integration and severity of symptoms are closely associated. Hollingsworth *et al* (1980) found that school performance and employment record were unremarkable at follow-up, but that all patients reported problems in maintaining close personal relationships.

These data, taken overall, suggest a very gloomy outlook. However, the studies involve small numbers of patients, often with wide age ranges and follow-up periods, and with a selective bias towards those requiring in-patient management. Lack of data on outcome criteria and in particular on the reliability and validity of assessments makes confident statements on likely outcome difficult. Furthermore, with the development of behavioural methods in treating the disorder within the last 15 years and the demonstration of their efficacy in adolescents (Bolton *et al*, 1983) it is possible that outcome has changed. This study sought to address these considerations within the limitations of a retrospective design.

## Method

All patients referred to the Highfield Regional Family and Adolescent Unit, Oxford, during the period 1974–79 and receiving a discharge diagnosis of OCD (ICD-9 coding 300.3; World Health Organization, 1978) were identified ($n = 30$) (1974 was the first year for which complete unit records of diagnosis were made and 1979 the last year in which all subjects had reached their third decade at the point of follow-up). The unit records and the computer records of the Oxford Data Linkage Project, Unit of Clinical

Epidemiology, Oxford, were cross-checked over a four-year period and reliability confirmed by a 100% agreement. The clinical notes of all those identified were examined, and those patients who met criteria set out by Judd (1965) for a well defined constellation of OCD symptoms without other major psychiatric disorder and severe enough to interfere with general functioning were included in the study ($n=26$).

The patients were traced via general practitioners and family practitioner committees. Those found were invited by letter to take part in a semistructured interview with one or both of the authors. During this, information was obtained about aspects of the patients' psychiatric history and current functioning. Inquiry was made about the patients' perceptions of their illness and its management during adolescence, and the nature and severity of OCD symptoms at discharge from the unit and subsequently. Patients were asked about the nature and severity of other psychiatric symptoms arising during the follow-up period, and about contact with and treatment received from primary care and psychiatric services in this time. There were also questions about psychosocial adjustment in terms of educational achievement, marital, family and employment status, and satisfaction with social and sexual life. As a means of corroborating the interview data, subjects were asked to complete standardised measures of mood and behaviour: the Beck Depression Inventory (BDI; Beck *et al*, 1961), the Maudsley Obsessive-Compulsive Inventory (MOCI; Hodgson & Rachman, 1977), the Speilberger State/Trait Anxiety Inventory (STAI; Speilberger *et al*, 1970), and the Social Adjustment Schedule (Corney & Clare, 1985), administered on the same occasion.

## Results

### Initial contact

The mean age of the sample ($n=26$, 14 boys, 12 girls) on first assessment at the unit was 15.25 years (range 12.5–18.4 years). The mean age of onset of symptoms was 12 years (range 8–17 years). Sixteen patients had received previous psychiatric treatment for OCD and seven for other problems. The average delay between onset and assessment for those for whom Highfield was their first referral for this problem was 2.1 years (range 6 months to 4 years), whereas for those who had received previous treatment the mean was 3.0 years (range 6 months to 7.5 years). Four patients had chronic or recurrent physical illness, and a further three had minor developmental difficulties. Ten patients had a history of psychiatric disorder in first-degree relatives, and in four this was OCD.

At initial presentation three patients had obsessional symptoms only, all with ruminations. Compulsive symptoms were divided into categories of cleaning and checking rituals following Bolton *et al* (1983) in order to facilitate comparison with other studies (e.g. Apter *et al*, 1984). The term 'checking' is used in a broad sense to include various 'safe-making' rituals including ordering and organising. Of the 23 patients with compulsive symptoms, nine had washing or cleaning rituals only, six checking rituals only, and eight had both cleaning and checking rituals.

Resistance to symptoms was recorded as absent for eight patients, although in a majority no assessment was noted. Temper outbursts associated with symptoms were described for 15 patients. In 11 cases OCD symptoms interfered with school attendance. Social isolation from peers was described by 22 patients; in 20 this problem pre-dated the onset of OCD symptoms. In 12 cases there was evidence of one or both parents being actively involved in the adolescent's ritualistic behaviour. In a further four cases parents gave frequent and repeated reassurance about obsessional thoughts.

The mean duration of contact with patients from referral was 1.4 years (range 0.1–5.7 years). Four patients were not engaged in treatment, and six patients were treated on an out-patient basis. Sixteen patients were admitted for a mean duration of 4.3 months (range 1–15 months).

Of those admitted, three showed sufficient improvement in symptoms (complete remission in one case) with the change in milieu alone, obviating the need for any specific treatment intervention. Behavioural response prevention programmes combined with family work were the management strategy of choice throughout the study period. Fourteen patients were treated in this way, three as out-patients. Overall five of these patients showed complete remission of symptoms at discharge, seven showed significant improvement, and two little or no change in symptom pattern or severity.

Five patients were engaged in other intervention programmes. One, treated as an out-patient with individual psychodynamic psychotherapy, showed complete remission of symptoms. Two patients (one in-patient and one out-patient) took part in family therapy without a behavioural programme, but there was no significant change in OCD symptoms in either. One in-patient was treated sequentially with antidepressants, major tranquillisers and ECT. Another out-patient was involved in a programme designed to improve socialisation and interactional skills. Both showed a deterioration in OCD symptoms during their contact with the unit.

Therefore, at discharge seven of the 26 patients referred were recorded as being completely without symptoms, nine as showing significant symptomatic improvement, four as being little changed with treatment, two as having deteriorated symptomatically, and four as refusing treatment.

### Follow-up

Of the 26 identified patients, 24 were traced. Of these, four declined to take part. A further six patients declined to complete questionnaires, but were willing to provide information about their health and circumstances. Outcome information is, therefore, available on 20 patients. There were no significant differences in age, gender, symptom pattern, compliance with treatment or presence of symptoms at discharge between those interviewed and the rest of the sample.

The mean age at follow-up was 25.1 years (range 20.1–28.5 years). This represented a mean of 9.8 years (range 6.5–12.0 years) since first presentation to the unit.

TABLE I
*Mood rating scores at follow-up*

| | *Total* (n = *14*) | | | *With OCD symptoms* (n = *6*) | | | *Without OCD symptoms* (n = *8*) | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Mean* | *Range* | *s.d.* | *Mean* | *Range* | *s.d.* | *Mean* | *Range* | *s.d.* |
| BDI | 11.7 | 0–29 | 8.4 | 17.8 | 12–29 | 5.88 | 7.12 | 0–18 | 6.29 * |
| MOCI | 8.3 | 0–21 | 6.3 | 14.0 | 10–21 | 3.70 | 4.0 | 0–11 | 3.39 ** |
| STAI state | 43.6 | 23–77 | 16.5 | 51.3 | 40–77 | 12.63 | 37.9 | 23–67 | 15.68 NS |
| STAI trait | 48.6 | 21–73 | 21.7 | 55.3 | 40–73 | 9.83 | 43.5 | 21–67 | 14.59 NS |

Mann–Whitney $U$ test *$U = 5$, two-tailed, $P < 0.05$.
**$U = 3.5$, two-tailed, $P < 0.05$.

*Psychiatric symptoms*

Ten patients had psychiatric disorder at follow-up. Six had OCD, all with compulsive rituals, their symptoms being severe enough to interfere with daily functioning, and four of these were receiving treatment. Two patients had subsequently been diagnosed as suffering from schizophrenia, both of whom were in the in-patient care of psychiatric rehabilitation services. Two patients were receiving out-patient treatment for depressive disorder without predominant OCD symptoms.

Since discharge from adolescent psychiatric services, a further four subjects had received treatment for psychiatric disorder, but at the time of interview were free of symptoms and discharged from treatment. One patient had received further successful behavioural treatment for OCD from a clinical psychologist, two had consulted their general practitioners about symptoms of anxiety and depression, and one obtained counselling about adjustment difficulties to acknowledged homosexuality.

Table I shows the scores on questionnaire ratings of mood and behaviour for the symptomatic and non-symptomatic patients at follow-up. The group with persisting symptoms scored as significantly more depressed on the BDI. Interview data regarding OCD symptoms were corroborated by significant differences between the group's scores on the MOCI. The scores of the non-symptomatic group are very similar to norms published by Dent & Salkovskis (1986) for this age group. There was no gender or age difference between groups.

*Social variables*

Table II presents characteristics on a range of variables associated with social adjustment in such a way as to allow some comparison between psychiatrically symptomatic and asymptomatic groups.

### Comparison of variables at initial contact and at follow-up

The inter-relationship of variables at initial assessment and follow-up was examined. Age of onset, time between onset and assessment, age at assessment, gender, OCD symptom pattern, presence of temper outbursts, familial involvement with symptoms and peer relationship difficulties before and after onset did not discriminate the symptomatic and asymptomatic groups at follow-up. A history of psychiatric disorder in first-degree relatives was associated with treatment for psychiatric disorder following discharge from adolescent services ($\chi^2 = 11.37$, d.f. 4, $P < 0.025$), although not with short-term outcome or symptom status at follow-up.

Table III illustrates the relationship between short-term symptomatic outcome at discharge and symptomatic outcome at long-term follow-up. The patients who were free from symptoms at follow-up included all those whose symptoms had completely remitted during earlier contact. None of these patients had received further psychiatric help or run a relapsing course. Two patients who were not engaged in treatment at initial contact spontaneously remitted in late adolescence and had remained free from

TABLE II
*Social variables at long-term follow-up*

| | *No. of all respondents* | *No. of symptomatic respondents* | *No. of asymptomatic respondents* |
|---|---|---|---|
| Living with parents | 6 | 4 | 2 |
| Reporting social isolation from peers | 11 | 8 | 3 |
| Unmarried | 17 | 9 | 8 |
| Reporting sexually active relationships | 5 | 0 | 5 |
| In work | 11 | 5 | 6 |
| Entered further education | 6 | 1 | 5 |

TABLE III
*Relationship of short- and long-term outcome ($n=26$)*

| *Short-term outcome* | *Long-term outcome* | | | |
|---|---|---|---|---|
| | *Non-symptomatic* | *Symptomatic* | *Refused* | *Not traced* |
| Complete remission of symptoms ($n=7$) | 7 | 0 | 0 | 0 |
| Symptomatic improvement ($n=9$) | 1 | 4 | 3 | 1 |
| Little, or no change ($n=4$) | 0 | 4 | 0 | 0 |
| Worse ($n=2$) | 0 | 2 | 0 | 0 |
| Not known ($n=4$) | 2 | 0 | 1 | 1 |
| Total | 10 | 10 | 4 | 2 |

symptoms without psychiatric intervention. In contrast, of the six patients who had not improved with initial treatment all remained psychiatrically ill, and had been in psychiatric care more or less continuously from discharge. Both patients subsequently diagnosed schizophrenic were in this group, neither receiving response prevention treatment. It is interesting in retrospect that both were suspected of having auditory hallucinations at some point in their illness and that both were noted at initial contact to have prominent affective symptoms in conjunction with their compulsions.

Of the patients who had shown symptomatic improvement but not remission at discharge, only one of those taking part had become free of symptoms. Three had persisting OCD symptoms with relapse occurring in the teenage years and following a chronic course despite treatment.

Few associations between variables recorded at initial contact and the follow-up indicators of social adjustment emerge. The maintenance or otherwise of good peer relationships in adolescence before and after onset of OCD symptoms is, however, significantly associated with reported satisfaction with peer relationships at interview in adulthood ($\chi^2=6.97$, d.f. 2, $P<0.05$).

## Discussion

Although the highest incidence of first onset of OCD symptoms is between 10 and 15 years (Black, 1974) prospective long-term outcome studies of the condition in this age group have not been forthcoming. This may be due to a relatively low prevalence, the frequent delay in presentation, and the difficulty of enlisting the co-operation of a considerable proportion of patients at this age. Prospective treatment studies have been of relatively small numbers of teenagers selected either by referral to national centres (Bolton *et al*, 1983; Apter, 1984) or by response to advertisement (Flament *et al*, 1985). Long-term outcome information is however essential in order to aid prognosis, assess treatment effectiveness, plan services, and highlight areas for further research. A study with retrospective design, despite all the well known shortcomings, can provide useful information. This study represents some improvement over earlier follow-up studies of OCD presenting in adolescence (e.g. Warren, 1965; Hollingsworth *et al*, 1980) by virtue of reporting a larger series of consecutive referrals in a relatively less selected population. The longer and more uniform duration of follow-up into adulthood together with the validation of interview data with questionnaire ratings of mood and behaviour are also advantages. However, the lack of complete follow-up data, particularly questionnaire responses, means that the results must be interpreted with caution.

The male preponderance reported in some series of children and adolescents with OCD (e.g. Adams, 1973; Hollingworth *et al*, 1980) compared with the uniformly equal sex distribution in series of adult patients, taken together with variations in symptoms, has led to suggestions of a discontinuity between childhood and adult forms of the disorder. This study provides confirmation of the continuity of the condition between adolescence and adulthood. The population presenting in adolescence appears epidemiologically similar to that seen in adult practice. Absent or little resistance to symptoms, temper outbursts sometimes with violence, and the rewarding involvement of family members are confirmed as common features of the condition in this age group. The results of treatment at initial contact as gauged by outcome at discharge, with 27% being symptom free and 61% having gained benefit from treatment, are in line with those reported by Bolton *et al* (1983) for a teenage population treated with behavioural programmes.

The level of psychiatric morbidity at long-term follow-up is high, with 38% of the sample reporting active symptoms of psychiatric illness at the point of follow-up, 23% having active symptoms of OCD. The validity of the finding is confirmed to some extent by the questionnaire results showing significant differences between symptomatic and asymptomatic groups, the latter being within established normative ranges. Rasmussen & Tsuang (1984) reviewed retrospective follow-up studies of adult OCD patients between 1936 and 1983. The percentages showing no change at follow-up after widely varying periods have ranged from 22% to 61%. The percentage of patients with an adverse outcome is thus less in the present study than in previously reported series of cases presenting in adolescence and more in line with studies of adult patients. Although it is necessary to be cautious as follow-up data are incomplete, this raises the possibility that presentation in the adolescent years does not carry *per se* an adverse prognosis. Those who continue to have OCD symptoms into adult life do, however, appear to have a poor prognosis with only one becoming free of symptoms as a result of subsequent treatment. This may be related to chronicity or severity of symptoms rather than age of onset.

Zeitlin (1986) found that among patients who attended both child and adult psychiatry departments of the same hospital, 72% of those with the symptom of obsessions in childhood continued to have the symptom at later presentation. This continuity was less marked for the ten patients given a diagnosis of OCD in childhood, only four of whom had the same diagnosis as adults. In this study six of the ten patients with psychiatric illness at follow-up had OCD. Overall 12 patients had been seen by adult psychiatric services and seven had been diagnosed with OCD.

High rates of celibacy and single status have been reported among OCD patients by a number of authors (e.g. Lo, 1967; Hollingsworth *et al*, 1980). Coryell (1981) reported little difference between matched OCD and depressed patients. The lack of normative information and a suitable comparison group make the data concerning social adjustment at long-term follow-up in this study difficult to interpret. There is, however, clear evidence to support the findings of Probst *et al* (1979) and Mawson *et al* (1982) that decrements in social adjustment are closely related to the presence and severity of symptoms. Nevertheless the association between peer relationships at first contact and subsequent satisfaction with friendships in adult life suggests a continuity in friendship patterns, with many patients remaining socially isolated throughout their lives. The follow-up interviews suggest that this is not confined to patients whose symptoms persist, but that a number of those who reported themselves free of symptoms had significant difficulties in social adjustment. A variety of personality traits have been associated with OCD (Lewis, 1957) and although no assessment of personality was included in this study, it seems likely that the social adjustment difficulties found, in particular social isolation and withdrawal, reflect such variables. It is interesting to speculate whether these patients represent a group at high risk of future symptomatic relapse and whether any preventative intervention is possible.

It is not surprising in view of the design of the study and the relatively small number of patients that few factors predictive of outcome emerged. An early and complete response to treatment and the absence of a family history of psychiatric illness were associated with a favourable long-term outcome. It may be that patients who respond best to treatment also have better outcomes at follow-up due to some, as yet undefined, predisposition possibly relating to personality variables or the precise nature of symptoms, rather than the efficacy of the treatment itself. Nevertheless the findings of this study suggest the importance of work to increase understanding of effective treatment methods for OCD in this age group and of the provision of adolescent psychiatric services with the resources to provide intensive treatment and support to patients and their families.

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# Types of Opiate Addiction and Notification to the Home Office

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Hospitalised drug addicts were categorised according to the time lapse between onset of their opiate abuse and their first notification to the Home Office. Late notification correlated with a lower level of dependence, a more intermittent pattern of misuse, and a greater likelihood of alcohol abuse. It is postulated that there may be two types of addiction which lie along a continuum.

Under the Misuse of Drugs (Notification and Supply to Addicts) Regulation 1973, it is a legal requirement for all doctors in the United Kingdom to inform the Home Office of patients they encounter who are addicted to notifiable drugs. There is usually a time lag between the start of drug misuse and the point in the addict's career when notification occurs.

Curiosity, peer group influence, and availability may initially lead people to experiment with drugs. Continued use may then stem from either a hedonistic desire for the pleasurable effects of these drugs or for reasons more peculiar to the individual. The latter may include the relief of social anxieties or the attempted resolution of personal difficulties. At this stage, the person does not regard drugs as central to his/her lifestyle and is able to cope with drug misuse or deny the problems that arise. Opiate users may limit their consumption or abstain temporarily to avoid physical dependence. However, some will progress to dependence and a regular daily 'habit'. They will then be forced to recognise that they have a problem and a need to obtain drugs regularly. Their lifestyle will become increasingly centred on drugs and related activities.

Contact with the medical profession may occur for a variety of reasons. Drug abusers may merely wish to obtain further drugs, or want help to achieve abstinence or treatment for the complications of their drug misuse. Greater contact with the health services increases the likelihood of notification to the Home Office, but although notification is a legal requirement, it is not invariably carried out. Concern over confidentiality, definition of who is an addict, and ignorance of the regulation have influenced doctors' decisions (Stimson, 1984). Other sources of notification include the police and prisons, although there is no statutory obligation to inform (Glaser & Ball, 1971).

A mistaken view widely held by many doctors is that notification is required only if treatment in the form of prescribed opiates is undertaken (Robertson & Bucknall, 1985; Strang & Shah, 1985). Glanz (1986) found that general practitioners notified the Home Office of only a third of their drug-dependent patients, but if they undertook to prescribe controlled drugs, the notification rate rose to 60%. Therefore, Home Office notification may reflect the degree of therapeutic involvement and, in particular, the prescribing of controlled drugs.

Patients seeking treatment for opiate dependence may therefore lie along a continuum. At one end are the 'committed' addicts for whom drugs are central to their lifestyle. Their day is organised around their drug taking, which in turn restricts their relationships, employment, leisure, and other activities. Towards the other end of this spectrum are the people for whom drug use has less priority and is one of a range of activities. They move in and out of drug misuse, sometimes becoming physically dependent. The 'committed' addict is likely to come into contact sooner with treatment agencies than the latter group and therefore be notified earlier to the Home Office.

## Method

A retrospective case-note analysis was carried out on all admissions during 1984 to the Drug Dependence In-patient Treatment Unit at Tooting Bec Hospital, London. When admitting patients, medical staff have routinely used a standard format to record the assessment with a view to research. In carrying out this study, information was systematically extracted from these records, independently of the staff involved in the clinical care of these patients. In addition to the medical and nursing notes, correspondence with social workers, probation officers, and other professionals was also examined. Home Office records were traced and the first date of notification for each patient noted. Information as to the age at first use of opiates was available from the hospital case notes. Comparison of the data allowed us to calculate the time lag in notification to the Home Office from the onset of opiate misuse for each patient. They were then allocated to one of three categories:

(a) early notifiers, under three years
(b) intermediate notifiers, between three and five years
(c) late notifiers, over five years' time lag.

## Results

The total sample consisted of 179 patients (109 men, 70 women). When categorised for notification, 51 patients were late notifiers, 67 early notifiers, and 61 intermediate. There were no significant sex differences between these three groups.

The place of birth was analysed, as this may have influenced contact with the National Health Service: 78% were born in England and Wales, 7% in Scotland, and 8% in Ireland. When subdivided according to notification, no significant differences emerged.

At the time of admission in 1984, the mean age of the whole sample was 29 years (range 18–53 years). Late notifiers were found to be significantly older, with a mean age of 30.9 years on admission as compared with 28.7 years for the intermediate, and 27.5 years for the early notifiers (ANOVA, $P<0.05$).

The age when opiates were first taken was used as a guide for the overall history of opiate misuse. For the sample as a whole, the mean age at first use was 21 years (range 13–50 years). Late notifiers were found to have begun using opiates at a significantly younger age than those with a shorter time lag for notification. The mean age was 18.8 years for late notifiers, 20.5 years for intermediate, and 21.8 years for early notifiers (ANOVA, $P<0.01$).

To estimate the consistency of drug taking, patients were classified according to whether or not they had been able to achieve abstinence for at least a year between the onset of their drug use and admission in 1984. Those free of opiates for one year or more (excluding periods of imprisonment) rose from 11% of early notifiers to 20% of the intermediate group, reaching 54% of the late notifiers ($\chi^2$, $P<0.001$). Thus although the late notifiers had longer overall histories of opiate misuse, they were more likely to have achieved periods of voluntary abstinence.

No significant differences were found between the groups for disruption of early family life, childhood disorders, education, employment, or marital status.

Patients were admitted in 1984 for a variety of reasons. These included opiate detoxification (70% of the total sample), stabilisation on a maintenance dose of methadone (20%), barbiturate detoxification (3%), benzodiazepine detoxification (8%), and alcohol detoxification (8%). Some patients were admitted with more than one purpose in mind or for other reasons, such as social crises. When analysed for notifications there were no significant differences between these reasons for admission.

Drugs used in the month before admission were also examined. Regular use was defined as at least once daily, five days per week. A wide variety of substances were being misused. These included heroin (83% of total sample), methadone (66%), diconal (9%), barbiturates (13%), benzodiazepines (40%), cocaine (15%), amphetamines (20%), cannabis (40%), hallucinogens (1%), and alcohol (32%). When the lag in notification was included in the analysis, only alcohol consumption showed significant differences: 27% of late notifiers as opposed to 13% of intermediate and early notifiers reported regular alcohol consumption ($\chi^2$, $P<0.05$). During the month before admission, 72% of the total sample reported injecting drugs intravenously, 18% intramuscularly, and 46% reported smoking illicit substances, mostly cannabis. No significant differences emerged when notifications were analysed.

During the first 24 hours following admission, patients were closely observed and were prescribed small quantities of methadone to control the physical withdrawal symptoms. The mean dose of methadone required was 30 mg for late notifiers, 40 mg for intermediate, and 37 mg for early notifiers (ANOVA, $P<0.05$). Thus the late notifiers appeared to be less physically dependent on opiates at the time of admission.

Almost two-thirds of the total sample reported past physical complications of drug abuse and 12% had abnormal liver function tests on admission. No significant differences emerged when notification was included in the analysis. The mean numbers of previous admissions to in-patient and residential treatment units were also found to be similar in each group. Likewise the durations of admission were similar.

Of the total sample, 45% discharged themselves from hospital against the advice of their doctors. Most had successfully completed detoxification, but were unwilling to remain for further rehabilitation. Of the late notifiers, 51% discharged themselves prematurely, more than in either of the other two groups, but this trend failed to reach statistical significance.

## Discussion

On the basis of the time lag between the start of opiate misuse and notification to the Home Office, two types of addicts have been identified. These types should not be seen as rigid categories but rather as lying along a continuum, with an arbitrary cut-off point between them. Those with a long time lag before notification were found to require smaller doses of methadone to control withdrawal symptoms on admission. The ward staff titrated the dosage during the first 24 hours according to physical signs of opiate withdrawal, and feigning of symptoms could therefore be discounted. They were also treated on a closed ward and the staff made strenuous efforts to prevent any smuggling of drugs.

Another indication of lower dependence in the late notifiers is the greater likelihood of abstinence from opiates for at least a year during their drug careers. However, this may also be a reflection of their longer history of drug misuse. It would appear that this type of addict experimented with and abused a variety of substances, but was not as 'committed' to opiates as the other group. They would abuse opiates either alone or along with other drugs for a period and then abandon them in favour of other substances or abstinence. Alcohol, in particular, may have been one of these substances. The careers of these addicts resemble those of alcoholics in that there was a fluctuating course, with periods of abstinence and abuse (Polich *et al*, 1981).

The second type of addict is the 'committed' one described earlier. Their level of physical dependence on admission was greater and they had fewer breaks in the continuity of their opiate misuse. They were significantly older when they first started to use opiates. Psychological factors rather than sociocultural ones may have been more important in aetiology. Being older, peer pressure may have exerted less influence. If drug use represented a temporary solution to psychological problems, it may have rapidly escalated to the point where a decision was made to seek help with consequent earlier notification to the Home Office. An alternative explanation may lie in the interaction of treatment with their addiction careers. Early notification may imply early exposure to maintenance methadone therapy, which in turn may have distorted the natural pattern and made them more 'committed'.

The division of addicts into types has implications for the choice of treatment. The management of opiate dependence has provoked much debate in recent years – in particular, the issue of long-term maintenance prescribing of methadone (Marks, 1987; Stimson, 1987). It has been claimed that such prescribing helps to reduce the complications of drug misuse by stabilising patients and drawing them away from dangerous practices. For our first type of 'uncommitted' addict such prescribing may be inappropriate. Although the 'uncommitted' addict, may have had a longer history of drug abuse, with shorter periods of treatment and greater alcohol abuse, there were no significant differences in the rate of complications between these two types on admission in 1984. For these 'uncommitted' addicts, intervention based on prescribing may need to be of short duration. They may require a treatment approach similar to that applied to alcoholics, whom they resemble in some respects.

The choice of treatment for the 'committed' addict is less clear. By definition, this type of addict may be reluctant to relinquish their use of drugs, yet they may be dissatisfied with the medical, social, or economic costs of their drug use. The offer of a lengthy prescription of opiates may attract 'committed' addicts into treatment. Once they are engaged they may then be persuaded to give up drugs completely. However, if this type of addict is the product of a maintenance therapy, then seemingly such treatment would perpetuate the addiction. One must also weigh up the disadvantages of maintenance therapy, the chief of which is the framework within which it is set. The focus is unavoidably on drugs, and it is difficult to shift the emphasis to psychological problems. Even when the intended programme is made clear from the outset, whether in the form of written or verbal agreements, difficulties still arise. Addicts by definition seek immediate gratification and subsequent changes in treatment may lead to anger, mistrust, and ultimate failure of therapy.

This study was based on data derived from a broad descriptive study of in-patient treatment of drug dependence (Ghodse *et al*, 1987). Retrospective case-note analyses have limitations in that data are collected in a clinical setting and rigorous research criteria are not always applied. However, the staff in the unit used a standard format in collecting clinical data, and full case histories were routinely prepared on each patient. A precise documentation was also available on dosages of drugs prescribed and the dates of notification to the Home Office.

The characteristics of these patients were not dissimilar from those of other comparable studies, although the proportion of women was higher (Blumberg, 1981). Nevertheless, as in-patients, the sample was biased, and a similar study of out-patients or clients of drug agencies may be more representative. More detailed decriptions of the source of the original notification and the nature and timing of the first treatment would also clarify some issues. The questions raised about treatment may be answered in a follow-up study of the two types of addicts described. If the concept of the 'uncommitted' type of addict is a valid one, it may reflect a much larger group in the general population who do not come for treatment and of whom very little is known.

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# Prevalence of Benzodiazepine Abuse and Dependence in Psychiatric In-Patients with Different Nosology

## An Assessment of Hospital-Based Drug Surveillance Data

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Frequencies of abuse and dependence assessed continuously within a drug surveillance system were analysed as a contribution to risk–benefit evaluations of benzodiazepines (BZDs). In 4.7% of 15 296 patients admitted to psychiatric hospitals between 1980 and 1985, BZDs had been involved in some kind of abuse or dependence. Primary BZD dependence, defined as physical dependence on BZDs in patients who had not been dependent before, was observed in about 1% of admitted patients. Linking these data with psychiatric diagnoses revealed a high risk of primary BZD dependence for in-patients (11.8%) with anxiety neurosis (ICD-9, 300.0), and a lower risk for neurotic (300.4) and for endogenous depressives (296.1) (risk 3.7% and 2.7% respectively). Older age was also related to primary BZD dependence. For depressive in-patients, the risk was twice as high in females as in males. Anecdotal observations advocate more systematic investigation of the emotional effects of long-term therapy with BZDs.

The widespread use of benzodiazepines (BZDs) has created concern about their benefit:risk ratio. In West Germany, prescription rates of BZDs declined between 1981 and 1984 (Müller-Oerlinghausen, 1986), probably as a response to extensive information within the medical profession on the long-term risk during recent years. However, a sound benefit:risk evaluation still remains difficult, since morbidity data are not included in conventional drug utilisation studies; retrospective surveys on clinical populations are burdened with unavoidable methodological drawbacks (Fleischhacker *et al*, 1986; Laux & König, 1987). Therefore, prevalence data on BZD abuse and dependence, which have been assessed continuously in all newly admitted psychiatric in-patients within an ongoing drug surveillance project, are presented. Abuse was evaluated according to the definition of the World Health Organization (WHO, 1965), and dependence was assessed in accordance with DSM-III (American Psychiatric Association, 1980). Special attention was given to the existence of low-dose BZD dependence (Petursson & Lader, 1981; Tyrer *et al*, 1981; Lader, 1983).

## Method

With the support of the Federal Health Office (Berlin), a drug surveillance system has been established by AMÜP (Arzneimittel-Überwachung in der Psychiatrie) in several psychiatric hospitals in West Germany since 1979 in order to investigate adverse drug reactions due to psychotropic drugs (Grohmann *et al*, 1984; Schmidt *et al*, 1986*a*). Special emphasis has been laid on monitoring of drug abuse and dependence in hospital in-patients since 1980 (Wolf & Rüther, 1984). This was done by means of a special questionnaire including all necessary information (e.g. all substances currently and previously abused, doses, duration of intake, withdrawal symptoms, psychiatric diagnosis) filled in by specially trained psychiatrists. They acted as drug monitors by contacting the wards of collaborative hospitals at weekly intervals, and questioned all treating physicians about drug abuse and dependence in all newly admitted patients. A comparison of biographical data with urine checks revealed no relevant covert intake of BZD in a subsample of patients.

A BZD withdrawal syndrome was recorded when at least two new symptoms emerged (Tyrer *et al*, 1981) that were specific for BZD withdrawal (Lader, 1983), or when pre-existing symptoms intensified after discontinuation or tapering of dosage and returned to the pre-withdrawal level within some days or weeks. (Withdrawal and rebound symptoms were not differentiated in this study, as both are conceived as manifestations of a common dependence mechanism (Lader & File, 1987).) All cases that were recorded within the first years of the surveillance period were re-assessed by the same procedure. Discrimination of side-effects of the initial psychopharmacological treatment was done by analysing the time course of drug effects.

BZD abuse was diagnosed according to WHO (1965) criteria in the case of drug intake without any clear indication or in higher than recommended doses. BZD dependence was diagnosed in accordance with DSM-III if the patient had shown withdrawal symptoms or tolerance. Primary BZD dependence was diagnosed when BZD had been the first drug in a patient leading to dependence; secondary BZD dependence was supposed if the patient had been dependent on other substances (e.g. alcohol, barbiturates) before he had developed BZD dependence. If BZDs had been the only class of drug leading to abuse or dependence, pure BZD abuse or dependence was recorded. If BZD had been taken with heavy ingestion of alcohol, or with other medical or illegal drugs, multiple substance abuse was diagnosed. To increase the reliability of diagnoses of abuse and dependence, case conferences headed by an experienced psychopharmacologist were held regularly for final assessments. This procedure had been proven sufficiently reliable in evaluating adverse drug reactions and was shown to be slightly superior to rigid algorithm strategies (Schmidt *et al*, 1986*b*).

Prevalence rates of BZD abuse and dependence, and of multiple substance abuse (including BZDs), were calculated by means of the diagnostic data on all patients admitted to the psychiatric hospitals of the Free University of Berlin (FU-B) and of the Ludwig Maximilian University of Munich (LMU-M) between 1980 and 1985. In both hospitals, diagnoses had been made according to ICD-9 (WHO, 1978). The drug utilisation data of our hospitals are described elsewhere (Schmidt *et al*, 1988). However, it should be stressed in this context that initially patients are often treated drug-free to ensure diagnostic security.

## Results

Drug dependence and abuse were diagnosed in 6.6% of all patients admitted to the collaborating hospitals, with BZDs being involved in 4.7% (i.e. 726) of all patients. In 35.4% of these 726 patients, pure BZD abuse/dependence was diagnosed, and in 64.6% BZDs had been taken in combination with other substances (multiple substance abuse). BZDs were the drugs by far the most commonly involved in abuse and dependence (Table I).

The prevalence rates of BZD abuse and dependence and multiple substance abuse (including BZDs) in diagnostic subgroups are presented in Tables II and III. Excluded

TABLE I

*Frequency of drug abuse and dependence in in-patients of the psychiatric hospitals of the Free University of Berlin (FU-B) and the Ludwig Maximilian University of Munich (LMU-M) between 1980 and 1985*

| | *FU-B* | *LMU-M* | *Total* |
|---|---|---|---|
| Number of in-patients | 4008 | 11 288 | 15 296 |
| Patients with drug abuse or dependence: | | | |
| number | 256 | 753 | 1 009 |
| % | 6.4 | 6.7 | 6.6 |
| *Medication involved in patients with abuse or dependence*[1] | | | |
| Benzodiazepines: % | 67.2 | 73.6 | 72.0 |
| Non-narcotic analgesics:[2] % | 28.1 | 24.3 | 25.7 |
| Barbiturates:[3] % | 10.5 | 12.1 | 11.7 |
| Psychostimulants/anorexigenics: % | 11.3 | 8.1 | 8.9 |
| Other hypnotics:[4] % | 3.5 | 5.4 | 4.9 |
| Narcotic analgesics: % | 3.9 | 4.9 | 4.7 |
| Clomethiazole: % | 0.8 | 5.3 | 4.2 |
| Anti-Parkinsonian drugs: % | 3.5 | 2.0 | 2.4 |
| Laxatives: % | 1.2 | 0.7 | 0.8 |

1. In the case of multiple substance abuse, the patients were counted for each category.
2. Including barbiturates.
3. Barbiturates excluding combinations with analgesics.
4. e.g. diphenhydramine, bromoureide, methaqualone.

TABLE II

*Prevalence of pure BZD abuse and dependence and multiple substance abuse in psychotic patients*

| | *Organic psychosis* | *Schizophrenia* | *Affective psychosis* | | *Total* |
|---|---|---|---|---|---|
| | | | *Mania* | *Uni- and bipolar depression* | |
| | *ICD-9 290-4* | *ICD-9 295, 7-9* | *ICD-9 296.0, 2* | *ICD-9 296.1, 3-9* | |
| | *(n = 1274)* | *(n = 6029)* | *(n = 737)* | *(n = 3411)* | *(n = 11451)* |
| *Pure BDZ abuse/dependence* | | | | | |
| Total: %[1] | 1.6 | 0.4 | 0.3 | 2.0 | 1.0 |
| Abuse: % | 0.3 | 0.2 | – | 0.6 | 0.3 |
| Primary dependence: % | 0.7 | 0.2 | 0.3 | 1.3 | 0.6 |
| Secondary dependence: % | 0.6 | – | – | 0.1 | 0.1 |
| *Multiple substance abuse* | | | | | |
| Total: % | 4.5 | 0.3 | 0.1 | 0.8 | 0.9 |
| BZD + alcohol: % | 0.9 | – | 0.1 | 0.2 | 0.2 |
| BZD + other medical drugs: % | 2.1 | 0.2 | – | 0.5 | 0.5 |
| BZD + alcohol + other medical drugs: % | 1.3 | 0.1 | – | 0.1 | 0.2 |
| BZD + alcohol + other medical drugs + illegal drugs: % | 0.2 | – | – | – | – |

1. Percentages are in terms of the total number of patients in the relevant diagnostic subgroup.

TABLE III

*Prevalence of pure BZD abuse and dependence and multiple substance abuse in non-psychotic patients*

| | *Neurosis* | | | *Personality disorder* | *Alcoholism* | *Depressive reaction* | *Others* | *Total* |
|---|---|---|---|---|---|---|---|---|
| | *Anxiety* | *Depressive* | *Hypochondriac* | | | | | |
| | *ICD–9 300.0 (n = 136)* | *ICD–9 300.4 (n = 649)* | *ICD–9 300.7 (n = 175)* | *ICD–9 301 (n = 460)* | *ICD–9 305, 5.0 (n = 1408)* | *ICD–9 309.0, 1 (n = 792)* | *(n = 225)* | *(n = 3845)* |
| *Pure BDZ abuse/ dependence* | | | | | | | | |
| Total | 17.7 | 6.9 | 4.0 | 4.5 | – | 0.5 | 6.2 | 3.7 |
| Abuse: % | 4.4 | 2.0 | 0.0 | 1.3 | – | 0.4 | 1.8 | 1.0 |
| Primary dependence: % | 11.8 | 3.7 | 2.9 | 1.9 | – | 0.1 | 2.2 | 2.0 |
| Secondary dependence: % | 2.2 | 1.2 | 0.5 | 1.3 | – | – | 2.2 | 0.7 |
| *Multiple substance abuse* | | | | | | | | |
| Total | 9.5 | 10.8 | 6.9 | 12.1 | 19.2 | 0.8 | 11.3 | 9.3 |
| BZD + alcohol: % | 4.4 | 4.5 | – | 4.5 | 9.9 | – | 4.5 | 3.4 |
| BZD + other medical drugs: % | 2.2 | 2.6 | 6.9 | 2.4 | – | 0.8 | 3.6 | 2.7 |
| BZD + alcohol + other medical drugs: % | 2.9 | 3.5 | – | 3.7 | 8.2 | – | 3.0 | 2.7 |
| BZD + alcohol + other medical drugs + illegal drugs: % | – | 0.2 | – | 1.5 | 1.1 | – | 0.2 | 0.5 |

from these tables are patients with drug abuse and dependence but no other psychiatric diagnosis. These comprise three patients with drug abuse (ICD 305) and 61 patients with drug dependence (ICD 304), among whom are eight patients with primary and four patients with secondary BZD dependence.

Prevalence rates of pure BZD abuse/dependence were higher in non-psychotic than in psychotic admissions (3.7% and 1.0% respectively). For multiple substance abuse (including BZDs) the difference was even more pronounced (9.3% for non-psychotic and 0.9% for psychotic). Primary BZD dependence was observed most frequently in anxiety neuroses (11.8%) and was diagnosed rather rarely in types of neurosis (in 3.7% of depressive neurotics, and 2.9% of hypochondriac neurotics). For all endogenous depressives, the rate was 1.3%, which was doubled (2.7%) in the subgroup of patients of unipolar type (ICD 296.1). Abuse of BZD in combination with alcohol was observed most frequently in alcoholics (9.9%), and BZD in combination with medical drugs was abused most frequently by hypochondriac neurotics (6.9%). BZD abuse patterns (including alcohol and other medical drugs) were highest in alcoholics (8.0%). Multiple substance abuse including illegal drugs occurred most frequently in patients with personality disorders (1.5%).

Characteristics of patients with primary BZD dependence compared with non-dependent patients are shown in Table IV. In all diagnostic subgroups, patients with BZD dependence were generally older than non-dependent patients; on average, the age difference was 9.5 years in depressive neurotics, 9.8 years in anxiety neurotics, and 5.8 years in endogenous depressives. In endogenous (unipolar type) and neurotic depression, the risk for BZD dependence was twice as high for females as for males (3.3% v. 1.6%, $P<0.001$; 4.6% v. 2.3%, $P<0.001$).

To obtain the frequency of subtypes of primary BZD dependence, the doses the patients had taken before admission were converted to diazepam equivalents (Poser & Poser, 1986). Dependence on low doses (i.e. ≤30 mg diazepam equivalent per day) was observed in 44.3% of patients, on intermediate doses (i.e. >30, <80 mg per day) in 40.7%, and on high doses (i.e. ≥80 mg per day) in 4.3%; in 10.7% of patients information regarding dose was insufficient. Of 86 patients with endogenous (unipolar type) or neurotic depression, 34 (50%) reported intake of low doses; of 16 patients with anxiety neuroses, 11 (68.7%) had increased their doses to an intermediate level; and of 8 BZD-dependent patients without any other diagnoses, 6 (62.5%) had taken high doses of BZD. Lorazepam and Bromazepam were mentioned most frequently in all patient groups with primary BZD dependence (21.8% and 18.0% respectively of all BZD counts).

Of the patients with primary BZD dependence, 19.3% reported having taken BZD continuously less than one year, 33.6% had taken BZDs between one and four years, 25.0% between four and ten years, and 8.6% more than ten years; in 8.6% of patients, no information

TABLE IV

*Comparison of patients with primary BZD dependence and non-dependent patients in diagnostic subgroups*

| | *Endogenous depression unipolar ICD-9 296.1* | | *Neurotic depression ICD-9 300.4* | | *Anxiety neurosis ICD-9 300.0* | | *Hypo-chondriacal neurosis ICD-9 300.7* | | *Others* | | *Total* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Male* | *Female* | *Male* | *Female* | *Male* | *Female* | *Male* | *Female* | *Male* | *Female* | *Male* | *Female* |
| All patients | 575 | 1054 | 257 | 392 | 37 | 99 | 109 | 66 | 5705 | 7001 | 6684 | 8612 |
| % of patients with dependence | 1.6 | 3.3 | 2.3 | 4.6 | 10.8 | 12.1 | 2.8 | 3.0 | 0.1 | 0.7 | 0.4 | 1.3 |
| Mean age of patients without dependence: years | 51.0 | 56.5 | 36.4 | 40.1 | 30.6 | 30.4 | 39.7 | 44.7 | 35.1 | 42.2 | 26.7 | 43.9 |
| Mean age of patients with dependence: years | 53.3 | 61.8 | 49.8 | 47.6 | 35.5 | 41.8 | 47.6 | 50.0 | 50.4 | 50.5 | 48.7 | 51.8 |

was available regarding the length of time for which drugs had been taken.

The leading withdrawal symptoms in all patients with primary BZD dependence were tremor/shakiness (54.1% of patients), agitation/restlessnes (53.3%), sweating/perspiration (42.6%), sleep disturbance (32.8%), and anxiety/tension (15.6%). Characteristic perceptual disturbances were observed in 9.8% of patients, delirium in 4.9%, and seizures in 1.6%. It should be noted that due to the naturalistic design of this study, in 34.4% of all BZD-dependent patients, BZDs were gradually discontinued after admission in order to reduce or alleviate withdrawal symptoms; 3.3% of this patient group left hospital against medical advice.

## Discussion

Concern about BZDs in regard to general health is indicated, as cross-sectional studies (Mellinger *et al*, 1978; Murray *et al*, 1981; Koenig *et al*, 1987) show that 6–12% of the population in Western countries take BZDs, about 0.5–2% on a long-term basis (exceeding one year). Up to 63% of the patients admitted to psychiatric hospitals in West Germany are prescribed BZDs (Ahrens *et al*, 1986). According to the present study, in 4.7% of admitted patients, BZDs were involved in some kind of abuse or dependence. Compared with prevalence figures of retrospective studies (Fleischhacker *et al*, 1986; Laux & König, 1987) and older large-scale surveys (Greenblatt *et al*, 1975; Marks, 1978), the prevalence of primary BZD dependence is much higher in this survey (1% of the hospital population). This is probably due to the fact that older studies focused mostly on high-dose dependence, which was found to be rare also in the present study (4 per 10 000 admissions). All other cases of primary BZD dependence (134 of 140 cases) involved low or intermediate doses taken by patients with psychiatric disorders.

The rate of risk for primary BZD dependence was highest in the anxiety neuroses. BZDs are known as rather efficacious in this particular patient group and are recommended on a short-term basis or with flexible dosage (Tyrer & Murphy, 1987). However, according to the present findings, BZD dependence existed in about one in eight admitted patients (11.8%). As in-patients with anxiety neuroses seem to be a highly selective patient group with chronic and severe symptomatology (Krieg *et al*, 1987), general conclusions for out-patients cannot be drawn from our data. For in-patients with neurotic or endogenous depression, the risk (3.7%; 2.7%) was much lower than for anxiety neurotics. The finding that among in-patients with depression the risk for females was double that for males may correspond to higher rates of prescription of BZDs to females and to higher exposures of depressed males to alcohol (Mellinger *et al*, 1978; Williams *et al*, 1982; Hasin *et al*, 1985; Koenig *et al*, 1987).

Higher age was also related to BZD dependence – a finding that was true especially for patients with neurotic and endogenous depression and also for anxiety neurotics. This observation is also compatible with the higher prescription rates in older patient groups (Mellinger *et al*, 1978; Koenig *et al*, 1987). In accordance with other longitudinal data (Krieg *et al*, 1987), it can be speculated that patients with anxiety and depression who develop BZD dependence present a more ill subgroup with long-persistent symptomatology.

It should be emphasised that BZD dependence in depressive patients is rather heterogeneous. One group consisted of patients with endogenous depression who had been misdiagnosed and mistreated with BZDs. These patients showed signs of physical dependence, but later remitted under tricyclics. Another group was formed by patients suffering from major depression with chronic symptomatology who had been treated with BZD, or tricyclics in combination with BZD. These patients showed only partial improvement under clinical treatment (Garvey & Tollefson, 1986). A third group was presented by neurotic depressives often characterised by dependent personality. We would not exclude that BZD medication, possibly justified initially but not terminated early enough, could have contributed to depressive–apathetic syndromes in some patients before leading to BZD dependence (Olajide & Lader, 1984; Lydiard *et al*, 1987). Therefore, systematic studies are urgently needed to investigate the risk:benefit ratio of BZDs on a long-term basis.

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# Self-Cathexis and Other-Cathexis

## Vicissitudes in the History of an Observation

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The history is traced of observations made of the phenomena associated with self-cathexis and other-cathexis. Owing to personal and other conflicts in the history of psychiatry and psychotherapy, the development of these observations was disturbed, and they were re-observed and re-described using different terminologies in accounts which have not hitherto been collected and compared. When this is done, a consensus appears which can be stated in a common language to facilitate further accretion of observation, and further research and debate.

In 1908 Karl Abraham published reflections on a certain clinical observation. The observation itself was not new, and may indeed have been a cliché of psychiatry at that time. As "all observers agree", Abraham (1908) wrote, there exists a "fundamental antithesis" between dementia praecox and hysteria: dementia praecox patients have abnormally little feeling for others, while hysterics feel abnormally much for others. In his paper Abraham explained this, probably as a result of conversations with Freud in 1907 (Jones, 1927), by Freud's sexual theory: the dementia praecox patient is in love only with himself, while the hysteric is neurotically (therefore excessively) in love with (makes a transference to) the other.

It would hardly occur to us now to make such an observation or to think it could have much significance if we did, schizophrenia being a psychosis, and hysteria, if it exists at all, a neurosis. But it was a starting point for observations of a kind of polarity or complementarity in neurotic and normal behaviour between emotional investment in the self, and emotional investment in others or in the object-world.

However, the development of this area of research was not at all smooth. It was almost immediately caught up in the hundred-year brawl that constitutes the history of modern psychotherapy. This paper attempts to show how the investigation was fragmented, how the phenomena persisted in attracting attention in different ways and in being described in different terminologies and from different points of view, and finally how it is possible by superimposing the different accounts to show a hitherto unrecognised consensus of observation, which on the face of it deserves at least more serious consideration, in view of its potential usefulness. Before examining this consensus I shall summarise the observations in historical sequence of ten (including Abraham) observers, with brief comment on the historical context. The detailed clinical descriptions that back up the observations are to be found in the books and papers of each observer; owing to their great quantity they cannot be reviewed here. In this paper, 'cathexis of' is used to mean 'investment of emotion in'.

The first vicissitude in the history of the observation was that it was caught up in the conflict between Freud and Jung. It was this observation that was under debate, and which was torn apart between them, at the time of the final parting of their ways.

### Observations of C. G. Jung

Jung read a paper on the theme in 1913, at the Psychoanalytical Congress in Munich, when Freud and Jung met for the last time (Jung, 1913). He did not refer to Abraham, but took the same starting point in the common observation: "It is well known," he began, that hysterics feel abnormally much about others and schizophrenics abnormally little.

Jung went on to say that the doctor therefore can keep a rapport with hysterics, but not with schizophrenics – in hysteria the libido is directed outwards, in schizophrenia inwards. He added a further observation that Abraham had not mentioned that when each illness is fully developed, a compensatory opposite movement is seen: the hysteric's libido turns inwards and he becomes obsessed with his symptoms and himself and withdraws from his usual social interactions; the schizophrenic's libido turns outwards and he becomes crudely attention-seeking and intrusive, forcing himself on others with little sense of normal restraint.

Jung proposed the terms 'extraversion' and 'introversion' for the two movements of libido, calling them 'regressive' where pathological emotive fantasy falsifies the patient's judgement. (Thus, he said, 'regressive extraversion' is effectually the same as what Freud referred to as 'transference', and 'regressive introversion' the opposite phenomenon in schizophrenia where the fantasy refers to the subject.) Pathological, regressive forms are like crude, exaggerated, immature forms of a normal movement.

He was to develop the theme further in a book and several papers (Jung, 1917, 1921, 1923, 1931, 1936). He observed the phenomena as they appear also in normal psychology: we all turn outwards to others sometimes, and inwards to ourselves sometimes, in a natural rhythm, like systole and diastole, but some of us, without necessarily reaching pathological states, habitually use one mode more than the other. As Jung saw them, healthy extraversion and introversion are both ways of relating to others – it is just that the introvert tends rather to start from himself, and the extravert to start from the other. It is only in *regressive* introversion that the introvert withdraws, devaluing the environment and other people as a defence, trying to cling to his autonomy, while the regressive extravert clings to others and disowns or represses any urges in him that would damage the bonds with others. The introvert's devaluing of others corresponds to the extravert's repression of his own impulses and wishes.

Jung observed that if one does habitually cultivate one style more, then one has the other in one's background, in the unconscious. It is in a less developed or regressive form, socially unadapted and childish, and liable to cause trouble unless one finds some means of cultivating it too, and developing it into a useful co-operation with one's dominant style.

In 1913, reading his paper at the congresss, Jung concluded by applying this observation of a normal polarity between self-cathexis and other-cathexis, which becomes pathological when extreme, to the great dissension between Freud and Adler, which had reached its climax only two years earlier in 1911. Jung thought they were both right, but that Freud described the psychology of extraversion, while Adler described the psychology of introversion. Jung said that Freud described a subject striving for pleasure in the object, using the infantile transference of subjective fantasies into the object in his attempts to achieve this aim, while Adler described a subject striving for his own supremacy, who defends himself against the threatening object-world by "masculine protest" and stubborn cultivation of his "guiding fiction". What can Freud have thought as he sat and listened to that?

By this time Freud's personal rejection of Jung was practically complete. For him, friendship could not contain differences of opinion as great as that between him and Jung. For example, Jung's idea that the incest motif in dream or fantasy could have a symbolic or religious meaning as well as the literal one was intolerable to him. He saw Jung as religious, and religion was Freud's *bête noir*. For him religion was a repressive society's means of suffocating thought (Freud, 1930). Four years earlier (according to Jung's (1963) account), when they were still friends, Freud had tried to enlist Jung's support in the erection of his sexual theory into a "dogma", as a "bulwark" against "the black tide of mud . . . of occultism", as though he saw in religion a serious threat to the recognition of the profound importance in neurosis, and, in human life, of sexuality – which for him was far more than just a medical–psychological discovery. Freud was not only a doctor treating patients, but also an original genius rebelling against the culture in which he found himself living. His faith and loyalty were devoted to "the mighty and primordial melody of the instincts" (which he thought Jung and others simply did not hear (Freud, 1914*a*)). This was the basis of the ideological, socially relevant aspect of Freud's work. To promote it, he hijacked psychotherapy, brand-named it 'psychoanalysis', and made it into a 'movement' (the 'psychoanalytical movement') as the vehicle of a powerful ideological thrust. It was bad luck for the humble, practical, medical procedure of psychotherapy that it should find itself caught up, like a peasant in a war between pope and emperor, in high ideological conflicts that should have been above its head, and whatever good Freud's ideological thrust had done to society, it made trouble for psychotherapy, as the history of the observation under discussion illustrates.

By 1913 Jung had come himself to represent to Freud the "black tide of mud", and from this Freud had to distance himself. In the May before the congress he wrote in a letter that he was near the end of writing *Totem and Taboo*, which came, he said, at the right time to deepen the gap between himself and Jung "by fathoms", and "serve to make a sharp division between us and all Aryan religiosity" (Jones, 1955).

In September in Munich, when Jung brought his paper on the subject to its conclusion, there is no way one could imagine Freud sitting there feeling glad and grateful to Jung for 'explaining' him. His ripostes came in the following year, first in *On the History of the Psychoanalytic Movement* (Freud, 1914*a*) and then, specifically on the self-cathexis/other-cathexis theme, in *Narcissism: an Introduction* (Freud, 1914*b*).

## Observations of Freud

In the latter, Freud (1914*b*) does refer to Abraham's original paper, but he starts with the definition of

Nacke (following Havelock Ellis) of narcissism as the attitude of one who "experiences sexual pleasure in gazing at, caressing and fondling his body, till complete gratification ensues . . . ." Developed this far, Freud goes on, narcissism is a perversion, but in other cases, he continues, it is rather "the libidinal component to the egoism of the instinct of self-preservation".

In a key passage Freud takes the polarity Abraham described back to a development origin: "We say that the human being has originally two sexual objects: himself and the woman who tends him, and thereby we postulate a primary narcissism in everyone . . . ." There are two possible choices: narcissistic object choice and an anaclitic object choice. Both options are open to each individual, and some individuals in adulthood, especially those whose libidinal development has been disturbed, such as homosexuals and perverts, love persons who are like themselves rather than like their mother because they really seek themselves as love objects.

Freud goes on to explain how, normally, with muturation the narcissistic libido is turned not on the ego but on the 'ego ideal' as introjected from the parents, and conscience is the "special psychical agency which performs the task of seeing that narcissistic satisfaction from the ego ideal is ensured. . . ." So the conflict between instinctual demands and conscience, or between sexual instincts and social demands, or what had previously appeared as a conflict between sexual instincts and ego instincts (self-preservation), is, at root, the conflict between two forms of sensuality: narcissism and object love. From this standpoint Freud rejects vigorously the assumption of Adler that self-assertiveness or the "masculine protest" is not rooted in sexuality, and Jung's conception of libido as energy not specifically sexual. Also, in the course of his argument, Freud comments that hysterics are over-attached not to the object but to inner fantasies of the object, which, he adds, would be the only legitimate meaning for the word 'introversion'.

Thus the polarity between self-cathexis and other-cathexis, first generally observed as schizophrenic–hysteric, which Jung restated as introvert–extravert, became for Freud narcissistic–anaclitic, polemically defined so as to invalidate Jung and Adler. As far as the psychoanalytic movement was concerned, that was the end of Jung's attempt at an integration of Adler's and Freud's viewpoints, and also of his terminology of 'introvert–extravert'.

## Observations of Adler

Alfred Adler had already commented on this theme. In 1910, in a paper about psychic hermaphroditism, he had given a surprising importance to the possible consequences of this same polarity, the polarity between emotional investment in (cathexis of) oneself, and emotional investment in the other person, but he expressed himself (typically of Adler) in the simplest possible terms, and referred to childhood rather than infancy. He wrote:

> "One can now easily see that the child plays a double role for a while. He shows tendencies of submission to the parents and educators on the one hand, and wishes, fantasies and actions which express his striving for independence, a will of his own, and significance on the other hand. This inner disunion in the child is a prototype and foundation of the most important psychological phenomena, especially neurosis, the splitting of consciousness, and indecision, and may result in a variety of outcomes in later life." (Adler, 1910)

Around 1910–20, then, there were at least three ways of seeing the polarity. Freud saw it as an erotic choice, between narcissism and object love, with the latter as the mature, normal option. Jung gave self-cathexis an equal value with other-cathexis, and saw self-cathexis, in its normal form, as including cathexis not only of the ego, but also of the individual's inner world, in effect the creative id or unconscious which is the source of one's gifts to the other. Adler saw the polarity not only between the self and any particular other, but also as between the self and the group. Like Freud, Adler saw mostly the negative, regressive side of self-cathexis: he saw it as very close to that search for individual superiority and power that destroys social feeling.

After 1914, however, after Freud's *Narcissism*, any chance of a harmonious programme of research and progressive development of the observation, shared by the different schools of thought, was gone. The divisive tower-of-Babel effect of the different terminologies, and the neglect by each school of the others' literature, led to some scholastic dogmatic development on the one hand, and naive rediscovery of the phenomenon under new terminology on the other.

## Observations of Eysenck

Jung developed the observation further along his own lines in the publications cited above. In the Jungian tradition it had remained much as he left it, but it is curious that introversion/extraversion is the only psychodynamic idea to have been taken up by behavioural psychology. From the 1940s, Hans Eysenck developed it, on the basis that some members of a population are more subjective in attitude, more thinking and inhibited, while others are more objective, acting, and impulsive (Eysenck, 1947).

At that time he thought the factor of sociability had more to do with neuroticism than with extraversion (Eysenck, 1947), although later among his associates sociability and impulsiveness seemed to become more important as discriminative factors (Wilson, 1977).

Eysenck and his associates found some useful and interesting things (Eysenck, 1947, 1970, 1976; Wilson, 1977): for example, a normal distribution curve of the two tendencies in the population, and that introversion apparently goes with greater internal or physiological arousal (which corresponds with the finding that in schizophrenia withdrawal is associated with high arousal (Venables & Wing, 1962)). Introverts are commoner in the upper and lower classes, are more socialised, although less sociable (i.e. more conscientious, reliable, adapted), are safer drivers, more likely to be obsessional, avoid rather than seek sensation, suffer more pain when tortured, are less sexually active, will secrete more saliva than extraverts do when lemon juice is dropped on their tongues, and are less likely to be in prison or be unmarried mothers, and so on. Eysenck's theory, however, excluding the unconscious as it did, remained a single-decker one rather than a double-decker like Jung's, in that Eysenck did not expect unconscious compensation for a dominant trend, nor recognise mature and immature forms of each trend. But Eysenck seems to have felt that his and his associates' development of the theme had left Jung far behind, for he wrote, "Psychologists will have to learn the plain historical fact that the personality types of extraversion and introversion owe very little to Jung, and the sooner this message reaches psychological textbooks the better" (Eysenck, 1970).

## Observations of Horney

Karen Horney was analysed by Abraham in Berlin in 1910, but she was reading Adler about the same time and her developed ideas owe much to him. Like Adler, she saw pathological craving for dishonest substitutes for real self-esteem as central to neurosis. Like him too, she saw that claims to neurotic superiority can be well disguised, for example as a pride in subservience, as well as more blatantly showing in, say, a compulsive need for power. She thought that Freud himself had a blind spot about power, because he was immersed in a competitive power-seeking society which he took to be normal, and that he did not realise, as she put it, that omnipotence, secondary narcissism, and the tyranny of the ego ideal are all expressions of one powerful current, the compensatory search for superiority (Horney, 1951).

Horney "discarded Freud's theory of instincts, and saw the core of human neurosis in human relationship" (Horney, 1951). Psychopathology she saw as morbid exaggeration or diminution (due to the search for superiority) of four simple normal aspects of interaction with others: closeness, distance, domination, and submission (Horney, 1937). (Later, by overlapping closeness and submission, she ended up with three rather than four basic attitudes (Horney, 1951).) Her descriptions of morbid forms of closeness and of distance correspond well to hysterical and schizoid behaviour, and the rich clinical detail she gives of the emotional and behavioural processes involved add greatly to our understanding of these conditions. For example just two of her chapter headings, "The self-effacing solution: the appeal of love" and "Resignation: the appeal of freedom" (Horney, 1951), refer to very useful additional observations: the morbidly dependent person idealises 'love', and sees self-effacement as a virtue, while the morbidly independent person idealises freedom and cultivates resignation - 'doing without' becomes a virtue. Whichever is over-cultivated, the personality will show only uncultivated, inferior, and troublesome forms of the other.

Like Jung, Horney expected cure to include the development and integration of the neglected trend or trends.

## Observations of Fairbairn

W. Ronald D. Fairbairn (1952) described a group of individuals as 'schizoid', who were characterised by: "1. an attitude of omnipotence, 2. an attitude of isolation and detachment, and 3. a preoccupation with inner reality." He commented that the concept "corresponds remarkably closely . . . to the concept of the 'Introvert' type as formulated by Jung . . .," but after weighing the advantages of the two words, 'introvert' and 'schizoid', he settled for 'schizoid'. Then, as he developed his observations of the splitting of the ego, he thought he saw hysterics split in the same way as schizoids, and so could not regard their pathology as any kind of opposite. Nevertheless, his observations (which there is not room to summarise here) add much to our knowledge of pathological self-cathexis.

## Observations of Balint

In *Thrills and Regressions*, Michael Balint (1959) opened with a wonderful clinical description of two contrasting patients. Balint refused to *define* the difference between them, asking the reader to let the vignette portraits themselves stand as the basic reference points for his book. Also he said that the two contrasting pictures are not merely opposites.

The two patients are clearly recognisable as respectively hysteric/extravert/anaclitic, or other-cathecting, and schizoid/introvert/narcissistic, or self-cathecting, but Balint used none of these terms. Instead he coined new terms 'ocnophil' and 'philobat' for the two attitudes. The ocnophil shows an absolute demand for the object, and cannot live without objects. The philobat loves to move unhampered and free in the friendly open spaces between objects, looking out for objects as dangerous, and developing expertise in managing and disarming them.

Both are ambivalent: the ocnophil, as well as loving the object, feels humiliated by needing him and resents him, and is always mistrustful, critical and suspicious, while the philobat, although he treats his objects very well to avoid trouble, is always, whether it shows or not, superior and condescending. Balint recognised that the extremes of each are regressive, longing to go back to a heavenly infant state of primary love, before the infant noticed with distress that he and the mother are separate beings. At that point of crisis the ocnophil tries to cancel the separateness by panicky clinging (which, tragically, interferes with being held, which is what the oncophil really wants), while the philobat tries to do it by developing an exaggerated self-sufficiency, and great skill in reducing conflict with the object (and tragically, therefore, real interaction) to an absolute minimum, to give a kind of illusion of primary harmony.

In analysis Balint aimed to enable his regressed patients to make a new, less panicky, beginning out of a state of something like primary love with the analyst, developing into a separateness combining better, less regressive forms of *both* modes of interacting, philobat and ocnophil.

## Observations of Kohut

With Heinz Kohut, much of the rejected contribution of Adler was reinstated but articulated in Freudian vocabulary. Kohut observed what Adler and Horney had observed: the enormous force of the 'powerful current' (Horney) towards superiority, power, self-worth, personal significance (Adler), and the need for respect. Like Horney, Kohut also thought Freud had a blind spot about power, and repeatedly commented on the exchange between Freud and Binswanger in which Binswanger remarked on Freud's own enormous will to power, and Freud replied that he might well have such a will of which he was unaware, as one can be unaware of the core of one's own ego (Kohut, 1966, 1971).

Kohut was an orthodox-enough Freudian to refer to such regressive self-cathexis simply as 'narcissism'. To use that word might imply belief in a sensual root of the need for a sense of worth or superiority, but in practice Kohut treated it like a primary need in its own right. Like Horney, he realised that its inferior forms should be cultivated, not discouraged. He pointed out that the word had become nearly a term of abuse among psychoanalysts, and he showed that if narcissism in any of its immature forms, in a grandiose exhibitionistic form for example, is treated as a phenomenon appropriate to early childhood and accepted by the analyst, indeed if the analyst responds to and *fosters* it into normal self-esteem the way a mother would do with her child, the patient responds well (Kohut, 1971).

But Kohut was also very impressed by his observation that there are what look like two opposite kinds of narcissism, two opposite ways in which the small child attempts to preserve an original perfect state of feeling completely good: in one the child idealises the object and derives self-esteem from it, and in the other he idealises himself. In the first, the child "attempts to save the original narcissism by giving it over to a narcissistically experienced omnipotent and perfect self-object." The motto here is 'You are perfect, but I am part of you'. In the other, "the child attempts to save the originally all-embracing narcissism by concentrating perfection and power upon the self – here called the grandiose self – and by turning away disdainfully from an outside to which all imperfections have been assigned." The motto here is 'I am perfect'. Kohut referred to these attitudes as "the two basic psychological functions" of "the bipolar self".

In the language of the others above, the first of these alternatives (idealising and depending so much on an object, for whatever reason) would be hysterical/extravert/anaclitic/morbidly dependent/ocnophil, rather than schizoid/introvert/narcissistic, etc., and it is confusing to hear Kohut describe such a strong, dependent object-cathexis as 'narcissistic'. It may be that here Kohut inherits an intellectual confusion introduced in 1914 by Freud's polemical need at that time to find the root of conscience by hook or by crook in the erotic instinct, and this makes it harder for Kohut to describe clearly the subtle manipulations of one drive by another. (That is an important theme but outside the scope of this paper.) Limited in his available vocabulary, Kohut used the word 'narcissism' for two opposite forms of the need for worth, rather obscuring certain differences.

Kohut went very far in his 'rehabilitation' of narcissism. For him narcissism is the source of man's highest achievements: creativity, humour, ability to empathise, the capacity to contemplate one's own finiteness; and even ultimate wisdom – "a participation in a supraindividual and timeless existence" – is achieved "on the strength of a new, expanded, transformed narcissism: a cosmic narcissism which has transcended the bounds of the individual" (Kohut, 1966). So the word that came into psychotherapeutic jargon in 1899 meaning sensually caressing and loving one's own body, extended by Freud in 1914 to subsume the activities of conscience, by 1966 has reached out to embrace the galaxies. But ludicrous as Kohut's phrase "cosmic narcissism" might sound to the ordinary English-speaker, he is striving to describe a real experience (similar to that covered by Jung's 'introversion'), in the only words left available after an intellectual amputation of cultural roots in a struggle for intellectual freedom, which of course characterised not only the psychoanalytic movement but also other modern movements.

### Observations of Mahler and others

It is remarkable what an exact corroboration the observations made of infants and very small children by Margaret Mahler and others have provided for Balint's deductions made from observations of regressed adult patients. These observers intimately and vividly describe the hazards of negotiating the gradual separation out of an original identity and then symbiosis with the mother into psychological independence and autonomy, and show how failure in this process may tend towards contrasting extreme forms of 'empty clinging' – a fusion and lack of differentiation between self and other – on the one hand, and on the other a cold, autistic detachment or premature independence (Tustin, 1972; Mahler *et al*, 1975). The stage, which Mahler describes as 'symbiosis', corresponds well to Balint's 'primary love'. Describing a healthy state of affairs at this very early stage (four or five months) she uses words reminiscent of Jung's 'systole and diastole' of introversion and extraversion:

> "One would expect that when inner pleasure, due to safe anchorage within the symbiotic orbit . . . continues and pleasure in the maturationally increasing outer sensory perception . . . stimulates outward-directed attention cathexis, these two forms of attention cathexis can oscillate freely . . . ." (Mahler *et al*, 1975)

Mahler describes how out of such a healthy state of symbiosis the infant can develop into what she terms the "separation–individuation" phase. She sees separation and individuation as two intertwined developmental tracks which do not necessarily progress in harmony or at the same pace.

Although for purposes of definition she describes 'separation' as a kind of disengagement from the mother, the moving and fascinating descriptions she and her coworkers give of small children negotiating these tracks show clearly how the child is not losing contact with the mother or 'separating' in the ordinary descriptive sense (as losing the mother by death or hospital admission, etc.), but changing the nature of the bonds with her, making them more flexible and versatile, able to reach the mother across increasing distances of time and space, and actually becoming more related to her in an active, conscious way (using speech and ideas more for example) rather than less related. So the successful child manages to combine the two tracks: the need for autonomy and freedom of Balint's philobats, and the need for object-relatedness of his ocnophils: self-cathexis harmonising with other-cathexis. For Mahler, the end achievement of the separation–individuation phase is correspondingly twofold: the achievement of a definite individuality, and the achievement of object constancy (Mahler *et al*, 1975). This needs to be worked at by both mother and child, and Mahler's and others' infant observations show much more than previous writers the part played by the mother in influencing clinging or withdrawal behaviour, and how the outcome results from mutual interaction.

### Discussion

I have shown how work on a valuable observation was fragmented by the intellectual and personal conflicts in the history of psychotherapy, and how the same observation was repeatedly reported using different vocabularies. It is easy to put the fragments together again; superimposing the above versions of the observation shows how much common ground they share. The common ground, with compatible individual additions, may be briefly recapitulated thus:

(a) Self-cathexis and other-cathexis are distinguishable activities which ideally ought to flourish in balance and harmony, but often do not (Abraham, Jung, Adler, Freud, Horney, Balint, Kohut, Mahler). Whether one gets both of them well cultivated and well married or not depends on early interaction with the mother, as one separates and individuates out of original unity or symbiosis with her (Freud, Balint, Kohut, Mahler). The earliest and worst failure of this separating/individuating process (and one of the most instructive for psychotherapists) appears in infantile autism (Tustin), and failures at later stages appear in other pathologies (Freud, Balint, Kohut, Mahler). To succeed in this aspect of development, one needs to retain and indeed deepen capacity for intimacy and relatedness, while developing autonomy and independence (Balint, Mahler). As well as cuddles and food and warmth, the child needs esteem and worth, and has to negotiate a reasonable harmony between the high opinion of himself that comes from within (through self-cathecting trends), and value derived from the mother and others (through other-cathecting trends) (Kohut). If it goes badly, and the infant or small child loses some confidence in the mother and in life, he may panic and trust too exclusively to one of these two modes of relating to others – self-cathexis or other-cathexis (Balint).

(b) The preferred mode then will have a less than optimal form, narrow and somewhat immature, although it may be more or less successful (even in some way very successful) (Jung, Horney, Balint). The other-cathecter (hysteric, extravert, anaclitic lover, ocnophil, etc.) will seek dependently to derive warmth and worth from close bonds with the other, disowning or even dissociating (repressing) any part of his personality, or anything arising from the inner world (impulses, thoughts, emotions) that would alienate the other, but generally over cultivating emotions because they are the links to the other, and preferring warmth to worth. The self-cathecter (schizoid, introvert, narcissist, philobat, etc.) will depend mostly on himself for warmth and worth, generating a sense of superiority from within, keeping the other at an emotional distance by calculated kindness or false submissiveness or domination or careful non-stimulation, relatively well aware of all stirrings in his own inner world (impulses, thoughts, emotions), but tending to hoard rather than discharge them, and playing down emotions because they could involve him with the dangerous other. He will be more ready to sacrifice warmth for the sake of worth. (Abraham, Jung, Adler, Freud, Horney, Balint.)

(c) Whichever mode one prefers, the other is neglected, and the neglected mode will be more unconscious, and even more infantile and unadapted than the preferred mode. Thus the ostensible other-cathecter will consciously dread loneliness but be unconsciously like an emotionally isolated infant, while the self-cathecter will dread fusion but unconsciously be abnormally liable to emotional infection and loss of identity to those around him, in an infantile way. (Jung, Horney, Balint.)

(d) The therapist as substitute parental family fosters maturation of the infantile aspects of both modes, especially the more rejected, and arranges a harmonious marriage between them (Jung, Horney, Balint).

If this is true, and such a consensus among conflicting authorities surely deserves to be re-tested and reassessed, it looks as though many of our troubles arise because life has opted not to exist as some enormous monad but as discrete individuals who have to separate one from another, by the division of cells and all that that entails, and then relate to each other, in families and groups. It is the learning to be separate and individual yet related, to harmonise the needs of one's unfolding individuality with the needs of one's group, to combine deep sensual bonding with emotional and spiritual freedom, cultivate friendship that can contain radical differences of vision, be "sincere and tactful" (Tustin, 1986), and so on, through the endless forms of this great essential conflict, that is so difficult.

The potential value of this skeleton key to human psychology and psychopathology and therapy appears more if one always asks the question: what is this person doing with his self-cathexis and what with his other-cathexis? How is he satisfying these twin needs, and are they acting in harmony or in conflict? The pattern mostly described by the above writers, of obvious one sidedness, is not all that common. (Although, incidentally, it does seem to settle the question of what 'hysteria' really is – all the features ever ascribed to hysteria, as neurosis or conversion symptoms or histrionic personality, are the expressions or panicky infantile other-cathexis.) More often one finds more complex states, like for example an anorexic who is defending against an infantile other-cathexis – a longing for fusion – by using an equally infantile self-cathexis – a merely negativistic anti-mother or antifamily pseudo-independence expressed by not eating. Another example might be an obsessional person, whose immature, anxious self-cathexis, in order to avoid frank conflict with others, makes him spin off into a futile repetitive internal conflict, while his regressive, sadistic other-cathexis uses his obsessions to make life miserable for his family, unconsciously feeding on their distress. Then there are mosaic chaotic states more complex still, as in borderline personality. But it does seem to bring clarity to many a diagnostic and psychopathological puzzle to ask this question.

So much for the area of overlap between the different observations, translated out of their different terminologies into one. There is not space to go into all the advantages of bringing together the areas of observation of the above writers which do *not* overlap, but I shall offer one example, of two of them who are strikingly complementary, Jung and Balint.

Balint (1959) explicitly states that his study concentrates on the attitudes of philobats and ocnophils to the outer world of objects, and that he says almost nothing about their respective attitudes to their inner worlds.

Jung is exactly the opposite: nearly all his material is about the encounters of introversion with the phenomena of the inner world (especially the archetypes and collective unconscious). His case histories usually omit the external life of the patients, and even his autobiography is all about his inner life, with a frustrating lack of information about his encounters with external reality.

Balint's attitude to the inner world was by contrast reticent and cautious, as appeared for example in his comments on creativity (Balint, 1968). In creativity, as Balint saw it, the subject produces something out of himself, with no external object present. "We know that there are no 'objects' in the area of creation, but we also know that for most - or some - of the time the subject is not entirely alone there. The trouble is that our language has no words to describe, or even to indicate, the 'somethings' that are there when the subject is not completely alone . . . ." Jung wrote 18 volumes, some of them very thick too, largely about these 'somethings', on the basis that all human languages are very rich indeed in words to describe them, in particular the words of religion and mythology, and art. So it is a clear and simple gain to add Jung's knowledge of the adventures of the philobat (or of any balanced individual employing his well cultivated philobatism) in his inner world, to Balint's knowledge of how both introvert and extravert deal with their outer worlds.

However, the consensus on self-cathexis and other-cathexis says nothing about selfishness and altruism (although some current usage of the word 'narcissism' tends to confuse this).

The overcultivation of either self- or other-cathexis in any person is more immediately obvious to the observer than his concomitant neglect of the other mode, and maybe the words we use should emphasise the correct psychodynamic understanding. For example, if (as I would suggest myself) the psychopathology involved is always some form of learned avoidance of the risks of whole love, then the words should reflect this, and the hysterical group of reactions should be described as something like 'autonomy fearing', and the schizoid group as 'relatedness fearing', but these are unwieldy words. The conflicts in the history of psychiatry and psychotherapy have left a problem of terminology: none of the vocabulary previously used in this area is really satisfactory. Abraham's terms refer too narrowly to pathology. Jung's term 'introversion' suggests only one aspect of self-cathexis. Freud's terms are too tendentious. Balint's just have not caught on. Horney's may be the best so far, but they have not gathered the richness of connotation of all the others. It may be that in this and other areas of psychotherapy, vocabulary will gradually improve, as psychiatry continues gradually to reclaim psychotherapy from ideological influences.

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# Would Monitoring by Electroencephalogram Improve the Practice of Electroconvulsive Therapy?

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Estimates of seizure length made by the treating psychiatrist were compared with estimates made by six-channel EEG in 100 electroconvulsive treatments in 22 depressed patients. In 70 treatments the doctor observed a fit which was shorter than 25 seconds. No doctor restimulated a patient in such a case and on only three occasions was the electrical stimulus increased at the next treatment. EEG monitoring revealed that only 30 of the treatments resulted in a seizure of less than 25 seconds, and this was detected in almost all cases by the treating doctor. The potential value of EEG monitoring was to identify patients whose visible seizure was short but where cerebral seizure length was satisfactory. Trainee psychiatrists often mismanage patients who have short seizures.

"A shameful state of affairs." Such was the description of the practice of electroconvulsive therapy (ECT) in an editorial (*Lancet*, 1981) after the publication of "Electroconvulsive treatment in Great Britain" by Pippard & Ellam (1981). Many improvements have taken place in the regulation and administration of ECT in the United Kingdom since the publication of these disturbing findings (Pippard, 1986), but Pippard & West (1987) warned recently that British standards of ECT practice may be in decline. The rate of incomplete or missed seizures in contemporary ECT practice may be unacceptably high (Snaith & Simpson, 1987; Bhatnagar, 1987), which may be the result of the wider use of brief-pulse ECT machines (Fink, 1987).

Pippard & Ellam (1981) saw ECT treatment sessions where few patients had a seizure and this was not recognised by the medical staff. Several methods have been suggested to confirm that a cerebral seizure has occurred, including the cuff technique to block the distribution of muscle relaxant to a limb (Addersley & Hamilton, 1953), the portable electromyograph (Ives *et al*, 1976), measurement of ECT-induced tachycardia (Larson *et al*, 1984), or changes in the electrodermal response (Watkins-Pitchford & Reynolds, 1984), and the measurement of seizure activity itself by electroencephalogram (EEG) (Christensen & Koldbaek, 1982).

EEG monitoring is widely used in the USA where the MECTA ECT machine is manufactured. This machine has a built-in single-channel EEG which records from two electrodes applied to the forehead. Brumback (1983) found that MECTA recordings of brain activity from bifrontal electrodes did not correlate with standard EEG tracings and were particularly susceptible to muscle and eye movement artefacts. Ries (1985) found a low inter-rater concordance in the estimation of seizure duration from MECTA EEG tracings, although this has been disputed (Warmflash *et al*, 1987). A serious limitation of single-channel EEG recording is that it cannot detect focal seizures, nor can it estimate seizure generalisation which may be an important influence on the antidepressant efficacy of induced seizures (Daniel, 1983).

The main aim of this preliminary study was to develop a reliable method of multiple-channel EEG monitoring of ECT capable of estimating seizure generalisation, and to assess the value of such a system in the routine practice of ECT.

## Method

### Patients

Twenty-two depressed patients from those routinely referred to receive ECT for the treatment of depressive illness at the Royal Edinburgh Hospital took part in the study. The sample consisted of 18 women (mean age 48 years) and four men (mean age 60 years). Three Research Diagnostic Criteria (RDC; Spitzer *et al*, 1978) categories were represented in the sample; probable major depressive disorder (one patient), definite major depressive disorder (18), and definite major depressive disorder, psychotic subtype (3). All patients received concomitant psychotropic drug therapy, although no patients received a benzodiazepine drug. None had received ECT within the previous three months.

### Procedure

This is a study of 100 consecutive EEG recordings of ECT treatments. In all patients, EEG recording was carried out at the first or second treatment and towards the end of the course. Additional recordings were carried out throughout the course of ECT, depending on the ability of individual patients to tolerate the procedure. Eight patients were sufficiently co-operative to allow recording of each treatment.

ECT treatment was given by a rota of 20 psychiatric senior house officers (including general practice trainees) and registrars. In attendance were two designated treatment nurses, and the anaesthetic service was provided by a rota of senior house officers and registrars in anaesthetics. All patients had a hospital ECT chart which detailed the indications for ECT and provided information about physical and mental health. Each treatment session was prescribed by the referring psychiatrist and there was a space for the treating psychiatrist and anaesthetist to record the treatment procedure and make any additional comments. The treating psychiatrist was expected to time the length of the seizure by a stop-watch.

The EEG recordings were made by an independent researcher who was not responsible for treating patients. Unknown to the treating psychiatrist, the ECT charts were reviewed and the doctor's estimate of seizure length, treatment details and any comments were recorded by the researcher. The EEG machine was at the opposite end of the ECT treatment room and the tracing could not be seen by the treating doctor. The treating doctor was not permitted to study the EEG record.

### *ECT*

ECT was given between 09.15 and 10.15 hours after an overnight fast. Anaesthesia was induced by thiopentone sodium (76 treatments) or methohexitone sodium (24 treatments), and followed by suxamethonium (100 treatments) to produce muscle relaxation. No regular anaesthetic premedication was prescribed. ECT treatment was given either by an Ectron CCX Series 3 machine (brief pulse, constant current) or by an Ectron Mark 3 machine (unidirectional, modified sine wave, constant voltage) on the instruction of the referring psychiatrist. Bilateral ECT was given with the electrodes in the bitemporal position. Unilateral ECT was given with the electrodes in the d'Elia position (temporoparietal). A course of ECT consisted of 3 to 14 (mean = 6.9) treatments as directed by the referring psychiatrist.

### *EEG monitoring*

Seizure activity was measured on six channels (pF1-Cz, pF2-Cz, F3-Cz, F4-Cz, C3-Cz, C4-Cz) of a portable EEG machine made by Specialised Laboratory Equipment (model 100P). The University Department of Medical Physics and Engineering developed an electronic relay triggered by the ECT stimulus which isolated the EEG machine for the duration of the stimulus. Satisfactory recordings were obtained about two seconds after the end of the treatment stimulus.

### Measures of seizure duration

In all cases the treating psychiatrist measured seizure duration with a stop-watch, by clinical observation alone. A sphygmomanometer suitable for use in the cuff technique was available but was never used. All doctors included the length of the treatment stimulus in their estimate.

Three measures of seizure duration were made, using the 6-channel EEG record. Total seizure length was the time from the end of electrical stimulation to the end of any paroxysmal seizure activity. Spike wave activity was timed to the end of bilateral spike waves and also to the last spike wave in any channel. The seizure lengths were estimated by an independent EEG rater who was blind to treatment details and read all 100 records. The first 20 records were also shown to three other independent raters who had a special interest in neurology or electrophysiology.

### Statistics

The inter-rater agreement in EEG seizure length was estimated by a Pearson correlation matrix. The effects of clinical variables, ECT machine and treatment laterality were assessed by independent sample *t*-tests or $\chi^2$-tests. All *P* values quoted are two-tailed.

## Results

Table I shows the clinical characteristics of the patients cross-classified with the type of ECT machine used and treatment laterality.

Table II shows the correlation between the main EEG rater and the three other EEG raters in their estimations of seizure length for the first 20 treatments. There is a close agreement among the raters. Recommendations about the

TABLE I
*Patient characteristics and ECT machine and treatment laterality*

| | *Ectron CCX* | | *Ectron Mark 3* | |
|---|---|---|---|---|
| | *Unilateral treatment (n=8)* | *Bilateral treatment (n=8)* | *Unilateral treatment (n=1)* | *Bilateral treatment (n=5)* |
| Sex | 6F 2M | 7F 1M | 1M | 5F |
| Mean age | 50 | 47 | 63 | 52 |
| RDC category[1] | | | | |
| PMDD-P | 1 | 0 | 0 | 0 |
| DMDD | 5 | 7 | 1 | 5 |
| DMDD-P | 2 | 1 | 0 | 0 |

1. PMDD-P = probable major depressive disorder, psychotic subtype; DMDD = definite major depressive disorder; DMDD-P = definite major depressive disorder, psychotic subtype.

TABLE II
*Pearson correlations between main rater and three other independent raters in estimations of seizure length (20 treatments)*

| *Measure* | *Rater 2* | *Rater 3* | *Rater 4* |
|---|---|---|---|
| Bilateral spike waves | 0.88 | 0.99 | 0.94 |
| Last spike wave | 0.89 | 0.99 | 0.95 |
| Total seizure length | 0.94 | 0.95 | 0.98 |

$P<0.001$ for all correlations.

minimum requirements of a therapeutic seizure are concerned with total seizure length. Although we can assess the amount of spike wave activity reliably, in this preliminary report the following results are concerned only with total seizure length.

Table III shows the distribution of total seizure lengths as estimated by the treating psychiatrist and as measured by the EEG. The table also shows on how many occasions the doctor's estimate was confirmed by EEG and on how many occasions the short fits on the EEG were detectable by the treating doctor.

The taskforce on ECT of the American Psychiatric Association (1978) and Fink (1987) have recommended a minimum of 25 seconds for the length of the induced seizure; however, d'Elia *et al* (1983) have recommended a mimimum of 30 seconds. Table III shows that 70 of the treatments (70%) were less than 25 seconds as measured by the treating doctor, although in only 30 of these treatments was the seizure less than 25 seconds as measured by EEG. Eighty-six of the treatments (86%) were less than 30 seconds as estimated by the doctor, although only 45 of these treatments were under 30 seconds as measured by EEG. Table III also shows that in 34 of the treatments (34%) the seizure lasted less than 25 seconds as measured by the EEG, and that in almost all cases (32/34) this was detected by the treating doctor. Forty-eight of the treatments (48%) were less than 30 seconds as measured by EEG, and in all but one case this was detected by the treating doctor.

On no occasion did the treating doctor restimulate a patient. There were only two occasions when the treating doctor made a written comment that a seizure was too short and recommended a greater stimulus on the next occasion. These recommendations were carried out, and on one further occasion a treating doctor gave a patient an increased electrical stimulus because of a short fit at the previous treatment. These findings are surprising because there were two patients in the study who had a series of short fits and were not getting better. For example, a 32-year-old woman required a course of 14 right unilateral treatments and in 10 of these treatments the observed fit was less than 20 seconds. On only two occasions – and only after the sixth treatment – was any attempt made to increase the electrical stimulus. A 68-year-old woman required 11 bilateral treatments and she had a series of 10 fits lasting less than 20 seconds on clinical observation. It was only after the fifth treatment that the electrical stimulus was increased.

TABLE III

*Cumulative distribution of total seizure lengths in 100 treatments as estimated by treating doctor and by EEG*

| *Total seizure length (seconds)* | *Doctor's estimate (number of treatments)* | *EEG estimate (number of treatments)* |
|---|---|---|
| 10> | 4 (0[1]) | 0 |
| 15> | 19 (3) | 5 (3[2]) |
| 20> | 41 (10) | 13 (11) |
| 25> | 70 (30) | 34 (32) |
| 30> | 86 (45) | 48 (47) |
| 35> | 88 (61) | 64 (63) |
| 35≤ | 12 (11) | 36 (11) |

1. Although the treating doctor estimated that four fits were shorter than 10 seconds, none of these four fits was shorter than 10 seconds on EEG.

2. Although five seizures were shorter than 15 seconds on EEG, this was apparent to the treating doctor in only three of these treatments.

There was a highly significant correlation between the estimate of seizure duration made by the treating doctor and that based on the EEG ($r = 0.56$, d.f. 98, $P < 0.001$). There was no correlation between the doctor's estimate of seizure length and age. There was a non-significant tendency for short seizures on EEG to be associated with older patients. There were four patients in whom the average EEG-measured seizure length was less than 25 seconds and 18 patients in whom average EEG-measured seizure length was greater than 25 seconds. The mean age of the patients who experienced short seizures was 59.7 compared with a mean age of 47.7 years in those patients whose average seizure length was greater than 25 seconds; this difference was not statistically significant. There was a non-significant negative correlation ($r = -0.34$, d.f. 20, NSS) betweeen age and average EEG-measured seizure length. In this small sample there was no association between an average fit length less than 25 seconds and sex, laterality of treatment or type of ECT machine. As noted above there were two patients who had a series of short fits and they required 11 and 14 treatments.

## Discussion

We have developed a reliable method of multichannel EEG monitoring of ECT which revealed that in 40 of the 70 treatments where the treating doctor estimated that the induced seizure had lasted less than 25 seconds, it had in fact lasted longer. These 40 patients would have been at risk of unnecessary restimulation or increased electrical stimulation at the next treatment, but this was only a theoretical risk because these remedial steps were rarely carried out. In those treatments in which the EEG revealed that the induced seizure lasted less than 25 seconds, this was apparent to the treating doctor on almost all occasions (32/34). Thus EEG monitoring contributed little to the identification of treatments where the induced seizure was too short. The potential value of EEG monitoring was to identify those patients in whom the observed seizure was short and cerebral seizure activity was satisfactory.

A limitation of this study is that time alone was used to define the minimum requirements for a therapeutic seizure. Although there is a general belief "that convulsive activity in the brain is the crucial ingredient" of ECT (Kendell, 1981), there is no general agreement about the minimum length of a satisfactory cerebral seizure. However, the recommendations of what constitutes a satisfactory tonic clonic seizure may vary with the methods used to monitor seizure activity, namely 30 seconds of generalised muscle activity (d'Elia *et al*, 1983), 25 seconds of muscle activity in the tourniquet method (Fink, 1979) or 30 seconds of epileptic activity on EEG (Fink, 1979). The American Psychiatric Association (1978) recommended that a seizure lasting less than 25 seconds may not be adequate; observation alone, the tourniquet method and EEG monitoring were all practical methods of ensuring that seizures were adequate.

There is only circumstantial support for these definitions. Although Ottosson (1962) believed that the grand mal seizure was an essential component of successful ECT, he found that the duration of the grand mal seizure had no significant relationship to therapeutic efficiency. Maletzky (1978) and Kramer (1983) found that there was a relation between cumulative seizure duration and clinical improvement, but neither of these studies controlled for treatment number. Later studies have supported Ottosson's belief that there is no relation between individual seizure length (as measured by observation or EEG) and clinical change during a course of ECT (Weiner *et al*, 1983; Rich & Black, 1985; Zorumski *et al*, 1986). The practical importance of these findings is that seizures lasting less than 25 seconds may be effective if they are grand mal in type and sufficiently generalised. On the other hand, the two patients who experienced the greatest number of short fits also required the greatest number of treatments. The minimum requirements for a therapeutic seizure were not investigated and merit further investigation.

It was these difficulties that prompted us to develop a method of measuring seizure length by multi-channel EEG recording. This permitted reliable measurement of the length of spike wave activity, which is the "signature of a seizure" (Martin, 1985). It is the spatial distribution of spike wave activity that distinguishes focal seizures from those that become generalised. We now plan to study the relation between clinical improvement and spike wave activity and also the influence of treatment laterality and ECT stimulus on the generation of spike wave activity. Until these studies are complete, it would be premature to recommend the adoption of this measure in clinical practice.

The minimum requirements for a therapeutic seizure are not fully defined. Until this is achieved, we may conclude from our findings that multichannel EEG monitoring is not necessary for all patients. We suggest that such EEG monitoring may be of value in the assessment of patients who are observed to have short fits. We also conclude, however, that a major problem in contemporary ECT practice is how short fits are managed by the trainee psychiatrists who administer ECT. All the treating doctors had received instruction in the practice of ECT by the consultant psychiatrist responsible for ECT. This included advice that observed seizures should last 25 seconds or more. Despite this, most of the doctors took no remedial steps when treatment resulted in short seizures. In the course of our study, we noted that with a large rota of junior doctors, an individual doctor will treat patients only about once a month. The ECT duty usually competes with ward work and is seen by some as a nuisance. Several doctors appeared to lack confidence in their abilities at first and there was little opportunity for them to gain much experience or expertise. The designated ECT suite nurses were experienced, but took a secondary role to that of the treating doctor.

Fink (1987) has urged the American Psychiatric Association to examine training practices in ECT and has suggested that competence in the administration of ECT should be a necessary preliminary for certification in psychiatry. Our findings suggest that we in the United Kingdom should also be concerned about the training and competence of psychiatrists who administer ECT.

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# Tricyclic Wash-out and Growth Hormone Response to Clonidine

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We have observed a significantly higher growth hormone (GH) response to clonidine administration (150 μg i.v.) in 14 patients with a major depressive disorder who had never received antidepressant therapy than in 14 matched depressive patients who had not received tricyclic drugs for at least 15 days. Compared with a control group of eight subjects, untreated depressed patients, as a group, had a normal response, while matched patients had markedly blunted response. Results for the group of untreated depressed patients showed that some patients had a blunted response while others had a response in the normal range. The results suggest that studies on the GH response to clonidine in psychiatric patients need to take into account the confounding and long-lasting effects of tricyclics.

Alterations in noradrenergic function have been postulated in patients with depression. One experimental strategy that has been used to study the noradrenergic system is acute challenge with the pharmacological agent clonidine. It is recognised that clonidine, by stimulation of hypothalamic post-synaptic alpha-2 adrenergic receptors, induces secretion of growth-hormone-releasing factor (GRF) and a discrete pulse of growth hormone (GH) release over the usual low baseline levels in humans. The GH response to clonidine may thus provide an indirect index of central adrenoreceptor function.

The methodological issue of the length of the tricyclic wash-out period is crucial in studies of the GH response to clonidine challenge. In normal subjects tricyclics alter the GH response to stimulation of the alpha-2 adrenergic receptor by clonidine for at least 3 weeks (Corn *et al*, 1984). We recently published our finding that patients with panic disorder have a normal GH response to clonidine (Schittecatte *et al*, 1988). However, these results were at odds with other studies (for a review see Charney & Heninger, 1986) where a blunted response was reported in these patients. We have suggested that the discrepancy might be due to the fact that the patients in these studies had a tricyclic wash-out period of two or three weeks, whereas, with the exception of one patient, ours had never received antidepressant therapy. The exception was the only patient with a blunted response. Blunted GH response to clonidine in depressed patients is a well-established fact (for a review see Siever & Uhde, 1984). This finding has been confirmed by most of the studies cited in Table I.

Table I summarises the available studies on the GH response to clonidine. In five independent studies depressed patients (mainly of the endogenous subtype) were reported as manifesting a blunted GH response to clonidine when compared with control subjects. Only one study (Horton *et al*, 1986) found no difference between depressed and control subjects in their GH response to clonidine administration (1.3 μg/kg i.v.).

The presentation of the results in these studies, except in one study by Siever *et al* (1986), does not permit classification of patients and controls as 'responders' or 'non-responders' to clonidine stimulation. Differences between subgroups of depressed patients in their GH response to clonidine are more controversial. One study (Checkley *et al*, 1984) found a difference between endogenous and non-endogenous depressed patients, but another study (Dolan & Calloway, 1986) found no significant differences between the two groups. The contradictory results might be due in part to the small sizes of the samples (7 patients per group). The studies used a wash-out period of one (Boyer *et al*, 1986; Horton *et al*, 1986) to four weeks (Matussek *et al*, 1980 and Siever *et al*, 1982).

We wanted to test the hypothesis that the blunted GH response to clonidine in depressed patients might be due, in part, to the recent use of tricyclics. One method of testing this hypothesis is to compare a group of patients who have never received antidepressant therapy with a matched group of patients who have not received tricyclics for at least 15 days. Another method is to compare the two groups of patients with a control group.

## Method

### Subjects

In a prospective study, we carefully selected 14 depressed patients (Group 1: 7 men and 7 women) who

TABLE I

*Studies on the plasma growth hormone response to clonidine in depressed patients*

| *Reference* | | *No. of patients* | *Diagnostic criteria* | *No. of controls* | *Clonidine* | *Minimum length of tricyclic wash-out: days* | *Results* |
|---|---|---|---|---|---|---|---|
| Matussek *et al* (1980) | 10 | (2M, 8F) endogenous v. 12 (5M, 7F) neurotic–reactive depressives | (+) | 32 (14M, 18F) | i.v. 150 μg | 28 | Endogenous depressive patients differ significantly from neurotic–reactive depressives and controls |
| Checkley *et al* (1981) | 10 | (6M, 4F) major depressives, endogenous subtype | (*!) | 10 (6M, 4F) | i.v. 2 μg/kg | 21 | GH response of the group of depressed patients significantly less than that of normal subjects |
| Siever *et al* (1982) | 14 | (?M, ?F) major depressives | (*) | 10 (?, ?F) | i.v. 2 μg/kg) | 28 | GH response significantly less for depressed patients than for controls |
| Charney *et al* (1982) | 11 | (6M, 5F) depressives, endogenous subtype | (*) | 11 (6M, 5F) | *p.o.* 5 μg/kg | 24 | Difference in the GH response to clonidine only in the male patients and controls |
| Ansseau *et al* (1983) | 15 | (?M, ?F) primary, v. 9 (?M, ?F) secondary depressives | (*!) | – | i.v. 150 μg/kg | 14 | Decreased response for the group of primary depressed in comparison with secondary depressed patients |
| Checkley *et al* (1984) | 7 | (5M, 2F) endogenous v. 7 (5M, 2F) non-endogenous depressives | (*) | – | i.v. 1.3 μg/kg | 21 | The patients with endogenous depression have smaller GH responses to clonidine than the patients with non-endogenous depression |
| Dolan *et al* (1986) | 7 | (?M, ?F) endogenous v. 7 (?M, ?F) non-endogenous depressives | (*!) | – | *p.o.* 5 μg/kg | 14 | No significant difference in GH response to clonidine in patients classified as endogenous or non-endogenous |
| Boyer *et al* (1986) | 10 | (1M, 9F) endogenous v. 10 (9M, 1F) neurotic–reactive depressives | (!) | 11 (?M, ?F) | i.v. 150 μg | 8 | GH response in the neurotic–reactive depressives identical to that in the control group. No GH response in the endogenous group |
| Horton *et al* (1986) | 17 | (?M, ?F) endogenous v. 17 (?M, ?F) non-endogenous depressives | (*!) | 31 (9M, 22F) | i.v. 1.3 μg/kg | 7 | No significant difference between depressed and control subjects. Subjects with endogenous depression do not show statistically significant blunting |
| Siever *et al* (1986) | 13 | (?M, ?F) major depressives | (*) | 7 | i.v. 2 μg/kg | 14 | Significantly greater number of blunted peak GH responses to clonidine (<5 ng/ml) in depressed patients than in controls. Peak GH response not different between groups |

*Diagnostic criteria*: (+) = ICD 8 (WHO, 1978); (*) = RDC (Spitzer *et al*, 1977); (!) = Newcastle (Carney *et al*, 1965); (*!) = RDC and Newcastle.
M = Male subjects; F = Female subjects.

had never received antidepressant therapy. They were assessed by the French version of the Schedule for Affective Disorders and Schizophrenia (SADS) (Spitzer & Endicott, 1978; Charles & Ansseau, 1987), and met DSM-III criteria (Spitzer, 1980) for a major depressive episode without melancholia. Patients with recurrent depressive episode constituted the majority of the sample (11 out of 14). Fourteen depressed patients, meeting DSM-III criteria for a major depressive episode without melancholia according to SADS, were selected randomly from a population of 86 patients to match for age, sex and diagnosis (Group 2). They had received tricyclic therapy in the recent past, but were drug free for at least 15 days before the experiment (mean of the tricyclic wash-out period:16.3 ± 3.8 days). Eight controls (six men and two women) also volunteered to participate in the study. They were not suffering from any medical or psychiatric illness. Analysis of variance (ANOVA) did not reveal any significant age difference between the two groups of patients and controls (33.43 ± 10.49 v. 37.29 ± 6.38 v. 31.75 ± 6.34; $F = 1.36$; d.f. = 2; $P$ = NS). All females were premenopausal and were tested within the first ten days of the menstrual cycle. All patients had been free of benzodiazepine drugs for at least five days. None had any medical disorder or was overweight. Patients and controls participated in the study after granting informed consent. The investigation was approved by the hospital ethics committee.

### Procedure

At 8 a.m., an intravenous catheter was inserted into a forearm of the reclining patients after they had fasted overnight. Five ml of blood were sampled for hormone determination 30 minutes before ($t-30$) and immediately before the infusion ($t-0$), starting at 9 a.m. Clonidine was administered intravenously at a fixed dose of 150 μg dissolved in 9 ml saline injection over a ten minute period. Subsequent blood samples were collected at +30 ($t+30$), +45 ($t+45$), +60 ($t+60$) and +90 ($t+90$) minutes after the infusion. Blood samples were centrifuged within two hours and the plasma was stored at −40 °C.

GH determinations were performed using a radioimmunoassay according to the methodology described elsewhere (Schittecatte *et al*, 1988). We calculated a mean baseline GH value which was the mean of the ($t-30$) and the ($t-0$) value, and a delta maximum value which was the difference between the ($t+30$) value and the mean baseline value. The data were analysed with the SPSS computer package (Hull & Nie, 1981). To compare the two populations, we used a two-way analysis of variance. To compare the different parameters, we used a Mann–Whitney *U*–Wilcoxon rank-sum *W* test.

## Results

The three sets of ANOVA results to assess the effects of clonidine on plasma GH levels in the two groups of depressed patients and controls are listed in Table II. The ANOVA always showed a significant time effect (all $P < 0.001$) of clonidine on plasma GH values.

Group 1 differed from Group 2 (group effect: $F = 18.9$; d.f. = 3; $P < 0.001$; group × time effect: $F = 4.7$; d.f. = 3; $P = 0.004$). The results reflected the differences between the two groups in the response to clonidine. The controls differed from Group 2 (group effect: $F = 105.02$; d.f. = 3; $P < 0.001$; group × time effect: $F = 13.98$; d.f. = 3; $P < 0.001$) but not from Group 1 (group effect: $F = 0.04$; d.f. = 3; $P$ = NS; group × time effect: $F = 0.24$; d.f. = 3; $P$ = NS).

As shown in Table III, we used a Mann–Whitney test to compare the different parameters. In the severity of the depressive episode evaluated by the Hamilton Rating Scale for Depression (HRSD) and baseline GH values there were no differences between the two groups of patients. Mean baseline GH values (BL) were 4.7 ng/ml or less.

For GH values at time ($t+30$) (8.59 ± 8.13 v. 1.71 ± 1.94; $P < 0.04$), and at time ($t+45$) (5.4 ± 5.59 v. 0.82 ± 0.8; $P < 0.02$) there were significant differences between Groups 1 and 2. So are delta maximum GH values (7.02 ± 7.89 v. 0.03 ± 2.7; $P < 0.005$). These GH values were significantly different between the controls and Group 2 (all $P < 0.001$) but not between the controls and Group 1 (all $P$ = NS). The results are shown in Fig. 1.

If we used a cut-off value for the delta maximum GH value of 4 ng/ml, 7 patients (5 men and 2 women) in the first group against 13 patients (7 men and 6 women) in the second group had an abnormal or blunted response (Fischer exact test: $P = 0.02$).

In Group 1 we found no statistical difference between the patients with a normal response and those with a blunted response, when analysed according to sex (cross-tabulation: $\chi^2 = 0.04$; $P$ = NS), age (39 ± 11.68 v. 27.86 ± 5.46; $z = -1.91$; $P$ = NS), HRSD (23.75 ± 3.69 v. 23.14 ± 3.98; $z = -0.12$; $P$ = NS) or baseline GH values (1.86 ± 1.98 v. 1.29 ± 1.68; $z = -1.11$; $P$ = NS).

In Group 2, we found no correlation between the length of the wash-out period and the delta maximum GH value ($r = 0.0077$; $P$ = NS).

TABLE II
*Analysis of variance of growth hormone response to clonidine in depressed patients and healthy controls* (F *values*)

| | *Time effect* | *Group effect* | *Gr × time effect* |
|---|---|---|---|
| | *d.f. = 3* | *d.f. = 1* | *d.f. = 3* |
| Gr1 v. Gr2: | 8.8** | 18.9** | 4.7* |
| Gr1 v. controls: | 11.67** | 0.1 | 0.24 |
| Gr2 v. controls: | 18.62** | 105.02** | 13.98** |

*$P < 0.01$, **$P < 0.001$, $P$ = NS.

Gr1: group of 14 depressed patients who have never received tricyclic therapy (7M, 7F).

Gr2: group of 14 depressed patients free of tricyclic drugs for at least 15 days (7M, 7F).

Controls: group of 8 control subjects (6M, 2F).

M = male subjects. F = premenopausal female subjects.

TABLE III

*Effect of clonidine on plasma growth hormone response concentrations in depressed patients and healthy controls*

| | *Gr1* | *Gr2* | *Controls* | *Mann-Whitney* U *test* | | |
|---|---|---|---|---|---|---|
| | | | | *Gr1 v. Gr2* | *Gr1 v. controls* | *Gr2 v. controls* |
| Age | 33.43 ± 10.49 | 37.29 ± 6.38 | 31.75 ± 6.34 | NS | NS | NS |
| HRSD | 23.36 ± 3.69 | 22.21 ± 4.61 | NA | NS | NA | NA |
| Mean baseline GH value (ng/ml) | 1.57 ± 1.79 | 1.68 ± 1.27 | 1.33 ± 2 | NS | NS | NS |
| GH value at $t$ +30 (ng/ml) | 8.59 ± 8.13 | 1.71 ± 1.94 | 8.51 ± 2.26 | $P<0.05$ | NS | $P<0.001$ |
| GH value at $t$ +45 (ng/ml) | 5.4 ± 5.59 | 0.82 ± 0.8 | 5.04 ± 1.95 | $P<0.05$ | NS | $P<0.001$ |
| Delta max GH value (ng/ml) | 7.02 ± 7.89 | 0.03 ± 2.7 | 7.19 ± 3.43 | $P<0.01$ | NS | $P<0.001$ |
| No. of subjects with a blunted response delta max GH value <4 ng/ml) | 7/14 | 13/14 | 0/8 | FET = 0.02 | | |

NA = not applicable.
Gr1: group of 14 depressed patients (7M, 7F) who have never received tricyclic therapy.
Gr2: group of 14 depressed patients (7M, 7F) free of tricyclic drugs for at least 15 days.
Controls: group of 8 control subjects (6M, 2F).
M = male subjects. F = premenopausal female subjects.

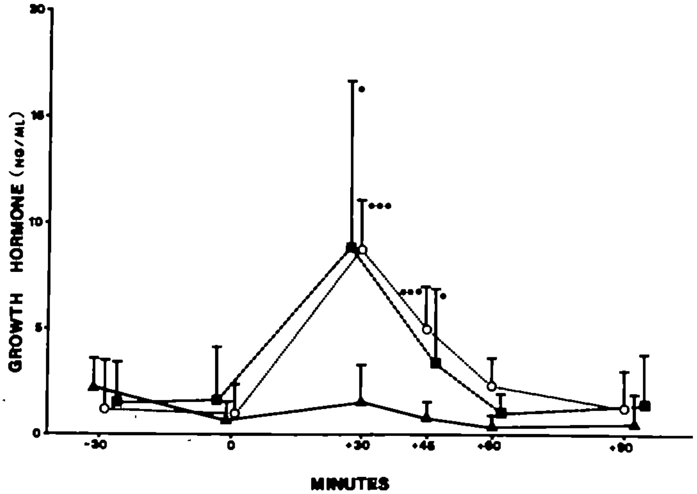

FIG. 1. Effects of clonidine on plasma growth hormone levels in two groups of depressed subjects and controls.
Group 1 (—■—): Depressed patients who have never received tricyclic therapy (7M, 7F).
Group 2 (—▲—): Depressed patients free of tricyclic drugs for at least 15 days (7M, 7F).
Controls (···○···): control subjects (6M, 2F).
M = male subjects. F = premenopausal female subjects.
Gr2 different from Gr1 and controls (*$P<0.05$, **$P<0.001$).
Gr1 not different from controls.

## Discussion

The results showed that depressed patients who have never received tricyclic therapy have a significantly higher GH response to clonidine than patients in wash-out for at least 15 days. As our two groups were matched except for tricyclic wash-out, we might question whether the 'well-established' blunted GH response to clonidine in depressed patients could be due in part to this artifactual patient characteristic, i.e. to the recent use of antidepressant. The fact that, in concurring with Checkley & Corn (1985) and Horton *et al* (1986), we found no correlation between the length of the wash-out period and the GH response to clonidine, does not, in our opinion, argue against this hypothesis.

Compared with a control group of subjects, untreated depressed patients, as a group, had a normal response, while matched depressed patients had a markedly blunted response. Our control group included mainly male subjects. In normal subjects, Tulandi *et al* (1987) found that men had a greater GH response to i.v. clonidine administration than age-matched premenopausal women tested in the follicular phase. Hunt *et al* (1986) found that GH levels, 90 minutes after oral administration of 150 μg of clonidine, were similarly raised in their female and male subjects. Comparisons between our patients and controls should be made with caution. However, our purpose is not to establish that patients are different from controls but to emphasise the difference between the two groups of matched patients when they are compared with a control group.

Further examination of the results suggests that some untreated patients had a response in the normal range while others showed no response to clonidine. This is consistent with the concept of the biological heterogeneity of the depressive syndrome (Siever *et al*, 1985). It may be that owing in part to the small size of our samples, we could not show any statistical differences between untreated patients with a 'blunted' response and patients with a response in the normal range. Studies on larger groups of depressed patients are needed to better understand this heterogeneity.

At this stage, as was previously shown for the dexamethasone suppression test, it would be interesting, in our opinion, to define a dichotomy between patients with a 'blunted' response and patients with a response in the normal range, and to analyse the profile of the two groups.

However, the studies need first to take into account the confounding and long-lasting effects of tricyclics. One method would be to study groups of patients who have never received antidepressant therapy. Another method would be to conduct a study on the maximum length of time taken for the effects of tricyclics on the GH response to clonidine to disappear. The length of time could vary from one person to another.

Finally, since Ansseau *et al* (1984) have proposed the use of the clonidine test as a biological marker of endogenous depression, one might question whether the use, in clinical practice, of a wash-out period of two weeks or more would be convenient.

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**Points of View**

# 1. Psychiatric Justice*

THOMAS SZASZ

It is now widely accepted, especially in the United States, that confining lawbreakers in mental hospitals as insane, without the benefit of a real trial, rather in prisons as criminals, after a proper trial, is a recent, enlightened Western practice. Nothing could be further from the truth. The practice is not recent, enlightened, or typically Western – resembling the Oriental despotic arbitrariness towards troublesome persons much more closely than the Occidental legal respect towards persons accused of crimes. Many 19th-century cases illustrate the procedure and support my foregoing interpretation of it. The following is a typical example.

In the years before World War I, Grigorii Rasputin, whom history knows as the 'mad monk', although he was neither mad nor a monk, was, after Nicholas and Alexandra, the most powerful person in Russia. As the Empress's most trusted friend and 'therapist', he exercised enormous influence over her; and she, in turn, had virtually complete control over the weak and ineffectual Tsar. Not surprisingly, Rasputin was widely hated and feared, and was eventually assassinated in 1916. However, there was a previous, failed attempt to kill him: in 1914, a woman named Chionya Gusyeva, dressed as a beggar, approached Rasputin in his home town of Pokrovskoe and, when Rasputin reached for his money, stabbed him in the lower abdomen. Rasputin survived. As for Gusyeva, she was treated much like countless Americans have been and continue to be:

> "Gusyeva was arrested. . . . She announced that she had tried to kill Rasputin for abusing his so-called sainthood, for his heresies, and for raping a nun. The authorities felt it would be a mistake to put her on trial. After a short imprisonment she was conveniently declared insane and put in an asylum in Tomsk. Her relatives made repeated attempts to get her out, on the grounds that she had 'got better', but the doctor in charge insisted that she continued to display symptoms of 'psychological disturbance and exalted religiosity'. She did not get out until after the February Revolution. . . ." (de Jonge, 1982, p. 238)

This procedure has all the earmarks of traditional oriental despotism: it is arbitrary; it is unilateral, the defendant's 'betters' deciding how best to deal with her; it is devoid of any mechanism for appealing the punishment; and, while defined as compassionate and humane (even medical and therapeutic), the charade simply serves the convenience of the defendant's adversaries (see, for example, Wittfogel (1957) and Szamuely (1974)). Long ago, this paternalistic procedure for dealing with persons who disrupt the social order was grafted to the tree of the American legal system. By pushing unwanted persons out on this limb, we ensure that they fall to their psychiatric deaths, while we bask in the glory of our therapeutic rationalisations (see Szasz (1987), especially chapters 9–11).

I regard the setting aside of a criminal trial and its replacement with psychiatric methods of punishing persons accused of crimes as one of psychiatry's most characteristic and most important social practices. Why? Because I value individual liberty and believe that a fair trial, conducted in public, is one of our most powerful safeguards against political tyranny, regardless of the tyrant's motives – to enslave and exploit his victims, or to protect and treat them.

There are, of course, many methods for determining guilt and punishing lawbreaking other than the criminal trial as practised in contemporary English and American courts. Indeed, figuratively speaking, the phenomenon of rule following/rule breaking begins at the simplest, impersonal, organismic level – namely, the transgression of biological rules and its consequences: to survive as an *organism*, man must eat and drink what is nutritious or at least safe, and avoid eating and drinking what is non-nutritious or poisonous. On a higher, interpersonal level, we observe or violate social rules: to survive as a *person*, man must obey certain rules or be punished for disobeying them. The important difference between these two phenomena is that the deleterious consequences of violating biological rules are automatic, that is, do not require the intervention of human agents, whereas the deleterious consequences of violating social rules are not automatic, but require the intervention of human agents. Furthermore, because

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*Adapted from the author's preface to the new edition of his book, *Psychiatric Justice* (Syracuse: Syracuse University Press, 1988; first published in New York: Macmillan, 1965).

the crux of social life is obeying and disobeying rules, all of us, at all times, are both potential rule followers and rule breakers. As modern sociologists have noted, in an important sense it is only the violation of rules and their punishment that define what the rules *really* are. This raises two simple but all-important questions: how do we know or ascertain that a rule has been broken, and, having ascertained it, by whom and by what means is the rule breaker punished? A brief glance at history gives us all the answers we need for our present purposes.

In the Judaeo-Christian world view, history begins with a crime and a punishment: the Fall was the crime, and our life and death its punishment. To be sure, Adam and Eve never received a trial – much less a fair one. There was no need for it: God, the Perfect Autocrat, knew when they were good and when they were bad. Accordingly, God needed no one else and nothing else to mete out justice: His perception, judgement, and punishment – all of which were just, by definition – were enough. When monarchs ruled by divine decree, emperors, kings, and tsars decided, in a similarly autocratic/despotic style, who was to be punished and how – and the punishment was always, by definition, just.

But unlike gods, men are not omniscient. Accordingly, it long ago occurred to them that a person might be accused falsely and punished unjustly. To determine whether or not rule violation has, in fact, occurred, more than accusation is needed; the accusation must be true. To punish justly, more than superior power is needed: the punishment must be fair and fitting. Out of such sentiments arose various mechanisms for adjudicating offences, among them our Anglo-American concept of due process.

In one form or another, trial is an ancient and virtually universal institution. Let us remember in this connection that Socrates and Jesus, Servetus and Galileo, witches and heretics, even Stalin's alleged enemies were all tried. To be sure, by our standards, these trials were not fair. But they were, morally and politically, better than no trial at all – better than people being massacred in the middle of the night by unknown executioners; better than people disappearing, without a trace, into concentration camps or the Gulag; better than people being dispatched, with a mockery of due process, to prisons called mental hospitals.

To appreciate what is bad, from a libertarian point of view, about despotic law enforcement, whether of the Oriental or psychiatric kind, we must be clear about what is good about the modern Anglo-American idea of a fair trial. As I see it, nearly all that is bad about the former and good about the latter can be put in one word for each – namely, *unilateral* and *adversary*. When God punishes the Israelites in the Bible, He weighs the evidence, He decides, He metes out the penalty – and that's that. And so it has been through the ages. Against this religious/despotic/paternalistic/therapeutic model of administering justice, there stands – often assailed, frequently feeble, but always beloved by the accused and all who treasure personal liberty and responsibility – the adversarial model. Although not as old as the despotic method, the adversarial procedure is also of ancient origin.

However, the history of social controls does not concern us here. What does concern us is that the modern Anglo-American concept of a fair trial can be reduced to three basic elements, namely: prosecution, defence, and judge/jury. In effect, the trial is a contest: the contestants – prosecutor and defence attorneys – engage in an argument or debate whose outcome they themselves cannot decide; the decision maker or umpire (judge/jury) himself cannot join the contest but must, instead, conduct it according to certain rules, and must decide who wins and who loses (or whether the contest is a draw).

As a people, we could decide that we do not like this system of adjudicating criminal responsibility, that we no longer believe that some persons charged with crimes are guilty and others innocent, and that those not proved guilty are entitled to remain free and unmolested by the government. But we cannot, it seems to me, continue to regard more and more lawbreakers as not-bad-but-mad and hope to preserve our hard-won political liberties.

In the East, where the right to property was never a fundamental value, the right to personal liberty never developed. In the West, where the two rights developed in tandem, both rights remain fragile and endangered – by communist subversion and aggression from without and, perhaps more importantly, by psychiatric/therapeutic erosion from within. This erosion, beginning at about the time of the French Revolution, gathered momentum all through the 20th century, reaching a critical level today. Now, in our typical psychiatrised non-trial, the prosecution does not prosecute, the defence does not defend, and the judge does not preside over a trial; instead, all three parties join in pretending to protect the defendant while, in fact, they are destroying him. The result is a regression to an ancient, religio-despotic criminal procedure where the guilt of the defendant was assumed from the outset and the 'trial' was merely the ceremonial purging of evil from the community. This turning away from the heavy existential demands of the adversarial criminal trial was already evident in many 19th-century insanity trials, including the classic so-called trial of Daniel McNaughton. I say so-called because, as I intend to show, McNaughton was never *really* tried: his trial was a charade, a mere formality.

The facts of the case are briefly as follow. On 20 January 1843, Daniel McNaughton shot and killed Edward Drummond, Sir Robert Peel's private secretary. Believing himself victimised by the Tories, McNaughton wanted to shoot Peel, but mistook Drummond for the Home Secretary. For reasons that need not concern us here – but principally because of the mounting aversion to the death penalty in Victorian England – counsel for both defence and prosecution, as well as the judges, all agreed that McNaughton was insane and should not be found guilty (see West & Walk, 1977).

The proceedings against McNaughton began on 2 February 1843, when he was asked to plead: "How say you, prisoner, are you guilty or not guilty?" After a pause, McNaughton answered: "I am guilty of firing". Lord Abinger (Lord Chief Justice of England) then asked: "By that, do you mean to say you are not guilty of the remainder of the charge; that is, of intending to murder Mr. Drummond?" "Yes," replied McNaughton. Lord Abinger did not ask whether McNaughton intended to murder Sir Robert Peel; instead, a plea of 'not guilty' was entered on his behalf. A fairly lengthy trial ensued at which much lay testimony was given in support of the interpretation that McNaughton knew perfectly well what he was doing, that he intended to kill Peel, but merely shot the wrong man. For example, Benjamin Weston, an "office porter" who happened to be on the scene, testified that "The prisoner drew the pistol very deliberately, but at the same time very quickly. As far as I can judge, it was a very cool, deliberate act." Others, among them a surgeon named James Douglas, testified similarly:

> "I am a surgeon, residing at Glasgow. I am in the habit of giving lectures on anatomy. I recognise the prisoner as having been a student of mine last summer. I had the opportunities of speaking to him almost every day; I merely spoke to him on the subject of anatomy. He seemed to understand it. . . . I never observed anything to lead me to suppose his mind was disordered." (See West & Walk, 1977, pp. 12–73)

Nine "medical gentlemen", led by Dr E. T. Monro, one of the most prominent alienists of the day, then testified,

> "all emphasizing that his delusions of persecution meant that 'his moral liberty was destroyed'. The Crown presented no medical evidence to rebut this, even though McNaughton had obtained firearms, had watched his victim for several days, and had waited till his victim's back was turned." (Smith, 1981, p. 103)

At that conclusion of all the testimony, the chief prosecutor addressed the jury and asked it to find the defendant not guilty by reason of insanity:

> "Solicitor General: Gentlemen of the jury, after the intimation I have received from the Bench I feel that I should not be properly discharging my duties to the Crown and to the public if I asked you to give your verdict in this case *against* the prisoner. . . . This unfortunate man, at the time he committed the act was labouring under insanity; and, of course, if he were so, he would be entitled to his acquittal." (West & Walk, 1977, p. 72, emphasis added)

I emphasise the word *against* to indicate that the prosecutor considered the decision to execute McNaughton as being against him, and the decision to imprison him for life as being *not against* him. But McNaughton never asked for this. Clearly, it was the lawyers and judges, not McNaughton, who were disturbed by the prospect of his being put to death. And so, in the end, Tindal, the chief judge, instructed the jury to bring in a verdict of not guilty by reason of insanity, leading to this colloquy:

> "Tindal, C. J.: . . . If you think you ought to hear the evidence more fully, in that case I will state it to you, and leave the case in your hands. Probably, however, sufficient has now been laid before you, and you will say whether you want further information.
> Foreman of the Jury: We require no more, my Lord.
> Tindal, C. J.: If you find the prisoner not guilty, say on the ground of insanity, in which case proper care will be taken of him.
> Foreman: We find the prisoner not guilty, on the grounds of insanity." (West & Walk, 1977, p. 73)

It is a shameful travesty of justice that, ever since 1843, historians and scholars, psychiatrists and lawyers, have spoken and written about the 'McNaughton trial', inasmuch as there never was a McNaughton *trial*. Calling what happened in court to McNaughton a criminal trial, formally designating it as "The Queen Against Daniel McNaughton", is an Orwellian untruth: the Queen did not proceed *against* McNaughton, she proceeded *for* him, so that, as the judge himself phrased it, "proper care will be taken of him".

Actually, English and American law is familiar with circumstances where judicial authorities do not seek to prosecute and punish a person but, on the contrary, endeavor to protect him (from himself and those who might take advantage of his helplessness). Called an *ex parte* proceeding, such an action is defined as follows:

> "On one side only; . . . done for, in behalf of, on the application of, one party only. . . . A judicial proceeding, order, injunction, etc. is said to be *ex parte* when it is taken for granted at the instance and for the benefit of one party only, and without notice to, or contestation by, any person adversely interested." (Black, 1968)

This is exactly how McNaughton as treated: the judicial authorities did not solicit his consent for treating him as a madman who, like a helpless child, cannot care for himself. Instead, assuming the duties of *parens patriae*, counsel for both the prosecution and the defence as well as the judges all relinquished their customary roles, and assumed instead the duties of guardianship. The legal proceeding responsible for McNaughton's fate after 1843 should have been called "*Ex parte* the Queen, in the matter of the mad Daniel McNaughton". Ironically, Queen Victoria, like Daniel McNaughton, was a party to this proceeding in name only. Actually, she was very angry with the conduct of the trial, maintaining that it is absurd to suggest that a British subject who deliberately sets out to assassinate one of her ministers is not guilty of a crime. Her displeasure with the (non)trial generated the historic hearing before the House of Lords that led to the adoption of what we now call the McNaughton rules.

Did McNaughton's self-appointed guardians help their ward? Yes, if we equate helping McNaughton with saving him from the gallows, whether or not he wanted to be saved. No, if we believe there are fates worse than death. *De jure*, McNaughton was treated as if he had been insane when he shot Drummond. *De facto*, he was treated as if he had been, was, and would always remain insane. McNaughton was confined as a madman for the remaining 21 years of his life, dying in Broadmoor in 1864.

By the time McNaughton came to trial, this method of disposing of capital cases was not at all unusual. "In practice," comments Roger Smith (1981, p. 23) in his definitive study of Victorian insanity trials, "a warrant of removal to a criminal asylum usually meant a permanent removal. It was extremely difficult to attribute 'recovery' to someone who had shown potential for violence." It was, indeed, because there was no desire ever to set such malefactors free. Everyone, including the alienists, knew perfectly well that imprisonment for life in an insane asylum without the possibility of parole was a terrible punishment. For example, Dr Forbes Winslow, a leading Victorian alienist and the proprietor of two private insane asylums, actually promoted the insanity defence by touting the terrors of psychiatric confinement:

> "To talk of a person escaping the extreme penalty of the law on the plea of Insanity, as one being subjected to no kind or degree of *punishment*, is a perfect mockery of truth and perversion of language. Suffer no punishment! He is exposed to the severest pain and torture of body and mind that can be inflicted upon a human creature short of being publicly strangled upon the gallows. If the fact be doubted, let a visit be paid to that dreadful *den* at Bethlehem Hospital . . . where the criminal portion of the establishment are confined like wild beasts in an iron cage!" (Smith, 1981, p. 31)

Thus, already by 1858, psychiatrists had hit upon this clever formula for advertising the asylum: for the non-criminal, the insane asylum is a *hospital*, the ideal place for treating mental illness; for the criminal ("where the criminal portion of the establishment are confined"), the asylum is a *prison*, the ideal place for storing "wild beasts", secure equally from escape by the hard-hearted criminal and release by the soft-hearted judge. Psychiatrists still use the same tactic to promote and justify involuntary mental hospital admission.

Surveying the fate of insanity acquittees serving life sentences in insane asylums, Smith (1981, p. 23) wryly observes that "Medical superintendents accepted their custodial role". That, I think, is putting it mildly. Actually, 'medical men' in Victorian England vied for the privilege of being the executioners of such brutal punishments – and ever since psychiatrists throughout the world have eagerly emulated them. These sobering facts alone should suffice to lay to rest, once and for all, the absurd canard that pyschiatric institutions are hospitals, not prisons; that institutional psychiatrists dispense treatments, not tortures; and that the inmates of mental institutions are patients, not prisoners.

Let us now return to the slightly different subject of unfitness to stand trial because of mental illness. From the legal point of view, insanity at the time of the crime is not the same as insanity at the time of trial: the former renders the accused not guilty by reason of insanity; the latter renders him (temporarily, in theory) unfit to stand trial. In either case, the result is about the same – the authorities denying an accused person a trial, or at least a speedy trial, without the participation or agreement of the defendant, and incarcerating him, as insane, in a psychiatric institution.

What has happened with respect to the particular procedure – the pre-trial psychiatric diagnosis and disposition of defendants – described in *Psychiatric Justice* since its first edition was published in 1965? *De jure*, a good deal; *de facto*, very little. This is not the place for a review of the voluminous legal and psychiatric literature on incompetence to stand trial. A brief summary of one landmark case, and a few additional remarks, should suffice.

In May 1968, Theon Jackson, a 27-year-old mentally defective deaf mute, was arrested for snatching the handbags of two women. The total value of his loot was $9. Brought before an Indiana court, the judge ordered Jackson to submit to a pre-trial psychiatric examination. Jackson was examined by two state-appointed psychiatrists, who diagnosed him as mentally unfit to stand trial. The trial court thereupon committed Jackson to the care of the Indiana Department of Mental Health until such time as he could be certified as fit to stand trial. The facility in which Jackson was confined had no member of staff who knew sign language, and there was not even so much as a bureaucratic pretence at 'treating' him or doing anything else to render him mentally competent to stand trial. Jackson's lawyer filed a motion for a new trial, which was denied. The State Supreme Court affirmed the denial, whereupon the case was appealed to the US Supreme Court, which agreed to hear the case and rendered a decision on 7 June 1972.

Because the court ruled against Indiana's indefinite quasicriminal commitment statute, *Jackson* v. *Indiana* is, in legal circles, considered to be a very important case. In fact, however, the petition on behalf of Jackson, as well as the court's ruling, were based on extremely narrow criteria. Concerning the former, the record states:

> "Petitioner's counsel . . . contend[ed] that his commitment was tantamount to a 'life sentence' without his having been convicted of a crime . . . absent the criminal charges against him, the State would have had to proceed under other statutory procedures for the feeble-minded or those for the mentally ill. . . . (Jackson v. Indiana, 406 US 715 (1972), p. 715)

In summary, the court decided that Indiana's indefinite commitment of a criminal defendant solely on account of his lack of capacity to stand trial violated due process. Such a defendant cannot be held more than the reasonable period of time necessary to determine whether there is a substantial probability that he will attain competency in the foreseeable future. If it is determined that he will not, the state must either institute civil proceedings applicable to indefinite commitment of those not charged with crime, or release the defendant. In effect, the court ruled that persons accused of crimes deemed unfit to stand trial ought to be committed "civilly" rather than "criminally". In practice, the decision has meant that defendants who, before *Jackson*, might have been confined indefinitely as mentally unfit to stand trial, would, after *Jackson*, be confined indefinitely following 'acquittal' by reason of insanity. Ezra Pound was incarcerated in St Elizabeth's Hospital, Washington, DC, as psychiatrically unfit to stand trial (see Szasz, 1963, pp. 199–211, 1984, pp. 158–165); John W. Hinckley, Jr, who shot and wounded President Reagan, is incarcerated in the same psychiatric prison after having been acquitted as not guilty by reason of insanity (see Szasz, 1984, pp. 147–156, 1987, pp. 255–271).)

Writing for a unanimous court in *Jackson* v. *Indiana*, Justice Blackmun offered a revealing comment on the broader issue of involuntary mental hospital admission: "The States have traditionally exercised broad power to commit persons found to be mentally ill. Considering the number of cases affected, it is perhaps remarkable that the substantive constitutional limitations on this power have not been more frequently litigated." (Jackson v. Indiana, p. 737).

And, in a footnote to this passage, he added:

> "In 1961, it was estimated that 90% of the approximately 800,000 patients in mental hospitals in this country had been involuntarily committed. . . . Although later U.S. Census Bureau data for 1969 shows a resident patient population almost 50% lower, other data from the U.S. Department of Health, Education, and Welfare estimate annual admissions to institutions to be almost equal to the patient population at any one time, about 380,000 persons per annum." (Jackson v. Indiana p. 737)

As I write this, the total number of patients in mental hospitals is somewhat smaller still, but the significance of psychiatric power to commit is not a whit less. Moreover, popular opinion – that is, the sentiment prevailing among lawyers, psychiatrists, journalists, and the general public – is swinging back towards re-embracing prolonged, even permanent, involuntary psychiatric incarceration as the proper remedy for social ills – especially homelessness and crime (See, for example, Fuller Torrey, 1988).

The criminals 'saved' by psychiatry in the 19th century stayed incarcerated until they died, sometimes for as long as 43 years. John W. Hinckley, Jr, currently the most famous American insanity acquittee, has already spent more than seven years in confinement – and his 'cure' does not seem imminent. Compare this with what happens to *convicted criminals*: "Those released from prison [in the 1980s] for murder and nonnegligent manslaughter served a median of 78 months in confinement . . ." (Minor-Harper & Innes, 1987). Thus, with capital punishment virtually abolished and prison time served for murder shorter than ever, 'psychiatric justice' is now even more punitive and more unjust than it was in the 19th century.

Clearly, this particular psychiatric practice – namely, the pre-trial psychiatric examination of defendants, the legal/medical judgement that they are mentally unfit to stand trial, and their subsequent psychiatric incarceration – hinges on, and is an integral part of, the psychiatrist's power to 'hospitalise' persons against their will. Psychiatrists have always had, and continue to have, a veritable love affair with practising coercion, which they equate with and then peddle as compassion; reciprocally, legislators, lawyers, and lay persons have had a love affair with submission to psychiatric coercion, which they equate with and then peddle as care. So long as this mutuality prevails, so long as virtually everyone believes that psychiatrists are entitled to exercise power over persons labelled 'mental patients', psychiatrists will gladly exercise such power and people will gullibly submit to it. Accordingly, it is both naive and foolish, albeit no doubt self-satisfying, for politicians, physicians, and the press to indulge in periodic outbursts of indignation at psychiatric 'abuses' (see, for example, *Lancet*, 1988). It is the very legitimacy of the psychiatrist's power – his moral and legal right to intimidate, much less coerce or imprison – that requires our scrutiny. And, in my opinion, our condemnation and rejection.

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# 2. Szasz on Psychiatric Justice

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It would be absurd to suggest that mental health legislation is never abused, that individuals are never detained unnecessarily on inappropriate psychiatric grounds, or that political expediency does not sometimes exert an influence on decision making in this regard. Dr Szasz, however, takes an extreme view in rejecting the moral or legal right of psychiatrists to participate in the compulsory hospital admission of offenders. He rightly points out that if psychiatric involvement is wrong in principle, then "periodic outbursts of indignation against 'abuses'" are "both naive and foolish". Nevertheless, he sees fit to support his arguments with examples of what he deems abuses.

Dr Szasz begins with cases which he identifies as politically motivated action under cover of spurious psychiatric diagnosis. He cites first the prolonged incarceration of Chionya Gusyeva following her attempt to assassinate Rasputin. His next example, of greater interest to British readers, is that of Daniel McNaughton, whose commitment to hospital in Bethlem led to a demand for clarification of the law on criminal responsibility and the formulation of the famous McNaughton rules. In these instances, as in many other cases of politically sensitive crimes (from the nocturnal intrusion into the bedroom of our own Queen to the shooting of President Reagan), the supposed abnormalities of the offenders may seem suspiciously convenient. Attributing the offending behaviour to mental derangement, especially if this avoids a contested trial, effectively forestalls public debate of circumstances or motives that might be embarrassing to the authorities.

In the McNaughton case, although Dr Szasz does not go into detail, there are grounds, which have been reviewed by Moran (1981), for suspecting that the crime (presumably directed at Peel and involving the private secretary only by mistake) could have had political rather than delusional motives. It appears that McNaughton was a political activist, a supporter of the Chartist movement, and an opponent of the Corn Laws, and therefore probably subject to harrassment by Peel's police. His complaints of persecution may have had some real basis. When he was arrested McNaughton, who was thought to be a poor working man, was found to have recently banked a very large sum, the source of which was never revealed. It is conceivable that he was a paid assassin. There are parallels with the murder of John F. Kennedy. Lee Harvey Oswald, a psychiatrically disturbed man, was declared responsible, but suspicions linger that he was put up or set up by others to take the blame – a theory reinforced by witnesses claiming that his shots were not the ones that killed the President.

Interesting though such speculations may be, they do not concern the accuracy of psychiatric opinions. Dr Szasz produces no evidence to show that in either the Gusyeva or the McNaughton case, the doctors were wrong. The fact that there may have been some solid political reasons for the killings is not incompatible with the killers having acted on morbid ideation. Psychotic pre-occupation with delusional signs of spouse infidelity is not incompatible with some infidelity having actually occurred. Likewise, delusional ideation around such topics as harassment by witches or political enemies may reflect popular beliefs current at the time.

Psychiatric assessments in particular cases may indeed have been fallible, but it does not follow that assessments are necessarily improper. Szasz argues that a diagnosis of insanity that dispenses with a trial of the facts of the case is unfair, because the opportunity to defend against a false accusation is lost. The McNaughton case is not a good example in this respect, since the killing was in public before witnesses. In the absence of psychiatric evidence, McNaughton would have hanged. Szasz argues that his indefinite detention may have been a fate worse than death, and that he should have had a choice. This ignores the fact that mental illness can deprive a person of the capacity to make an informed choice, in which case being dealt with "like a helpless child" may be no bad thing.

Where there is any room for doubt that the accused committed the crime, being found unfit to stand trial may be a disadvantage. The Butler Committee (Committee on Mentally Abnormal Offenders, 1975, p. 148) commented unfavourably on the fact that: "Once it has been determined that the offender is under disability there is no provision for the facts to be investigated in court." They proposed that there should always be a trial of the facts to the fullest possible extent, and an opportunity given to the jury to return a verdict of not guilty, should the evidence be found inadequate.

Regardless of the merits of their case, offenders who have not had a full trial may continue to protest to others, and in some instances deceive themselves that they have committed no crime. An additional reason why this reform would be helpful is that an account of the offending behaviour which has been tested and substantiated may assist those who at a later date have to assume responsibility for determining when the offender patient can be safely returned to the community.

Contrary to American practice, the procedure for finding a defendant unfit for trial is applied only rarely in England. For the great majority of mentally disordered offenders, decisions as to disposal are taken at the sentencing stage, so that many of the criticisms made by Dr Szasz do not apply. The argument that persons sentenced to imprisonment for homicide are likely to be detained for shorter periods than those committed to hospitals is not necessarily true for England. The implementation of the provisions of the Mental Health Act 1983, and the increase in the powers of mental health tribunals to discharge 'restricted' patients, have strengthened the procedures for periodic reviews and release as soon as mental state permits. Moreover, in making such comparisons with imprisonment, Dr Szasz takes no account of the benefits of a hospital environment for the mentally ill offender.

Dr Szasz (1961) has written in the past of what he calls *The Myth of Mental Illness*. His arguments stem from a profound scepticism of the concept of psychiatric disturbance and of the justification for regarding some offenders as not fully in control of their actions, and therefore deserving of care and treatment rather than punishment. Admittedly, the borderline is hard to define and some offenders deemed abnormal may be reacting to adverse social pressures rather than expressing individual pathology, but it would be cruel and uncivilised not to recognise that some offences are committed almost entirely as a result of illness. Sensitivity to the possibility of unnecessary detention due to overcaution, or to the dangers of overenthusiasm for forced treatment of individuals who are capable of deciding for themselves whether they want it, is entirely admirable. On the other hand, to dismiss altogether the possibility of compulsory hospital admission for individuals who are a danger to themselves or others as a consequence of illness, as Szasz recommends, would be to throw out the baby with the bathwater. It would also be an affront to the sense of justice which Szasz himself supports.

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*Case Conference*

# A Dementia Syndrome of Dependency?

ROGER HOWELLS and BARBARA BEATS

The diagnostic process in a case of dementia associated with physical and emotional dependence is described. The utility of sodium amylobarbitone abreaction is considered. The role of both psychodynamic and organic factors are emphasised in the aetiological work-up. The organic factors discussed include alcohol, sedative tranquillisers, solvents, and metals. The term 'pseudodementia' is not favoured, and the phrase 'dementia syndrome of dependency' is proposed.

## Objectives

Dementia in 'functional' psychiatric illness can lead to diagnostic and conceptual problems for the clinician. This is well illustrated by dementia in depression, where the term 'pseudodementia' is widely used to indicate the non-organic element. Pseudodementia has acquired a number of meanings, and because of this it has been argued that the term is best avoided (Mahendra, 1983). Much less common than dementia in depression is dementia in those exhibiting 'dependency'. Such a case was presented to a neuropsychiatry case conference held at the Institute of Psychiatry, and the conference was asked to weigh up the aetiological factors – emotional, social, and organic – and to comment on the diagnosis.

## Presentation of case

A 53-year-old woman was referred by Dr George Stein from Farnborough Hospital for further assessment of abnormal behaviour associated with apparent intellectual decline.

### Family history

The patient's mother died in 1985, aged 70. She was described as a resentful, demanding person, who obstructed her children's activities and boxed her daughters' ears until late adolescence. She had had in-patient treatment with ECT for depressive illness on many occasions. Her father was a violent man who drank heavily. He died in an accident when the patient was 12. The patient is the eldest of four siblings; both she and her sister are deaf. Her brothers have no physical or psychiatric problems. There is no family history of neurological illness or dementia.

### Personal history

The patient was born and raised in south London. Her birth history and subsequent development were unremarkable. She passed her 11-plus examination, but left school at 15 with no further qualifications.

The patient had worked on the shop floor of a chromium plating factory for two years, as a chemist's assistant for three years, and in a dry-cleaning firm for some years.

The patient first married at 18, after a three-year courtship. The couple lived with the husband's family. There was considerable disharmony, and the patient sought solace with her husband's nephew. A divorce ensued, with custody of the two children given to the husband. When aged 30, the patient married the nephew, and they now have a son aged 28, who described the marriage as tumultuous, observing that he was effectively brought up by his father. At present the couple live in their own home, and the husband works as a night security guard.

### Medical and psychiatric history

The patient has good general health but for a hearing problem. Symptoms suggestive of Menière's disease were present at the age of 19, and when 29 she had a left labyrinthectomy.

Her psychiatric history began at 29 when she was admitted to the Maudsley Hospital, suffering from depression in the context of marital difficulties. She would not discuss the conflict, and there was no response to tricyclic antidepressants. It transpired that before this presentation she had been treated by her general practitioner with a variety of drugs, including dexamphetamine sulphate, chloral hydrate, and phenelzine. At the age of 40 she was referred by her ENT specialist to the Department of Psychological Medicine at King's College Hospital for apparent elaboration of her aural symptoms. She was seen regularly, and twice admitted after attempted self-poisoning. A diagnosis of personality disorder was made, and sedative tranquilliser abuse was documented.

Her abuse of drugs was substantial. Between the ages of 40 and 44 she was known to be abusing glutethimide. When 49 she was taking high doses of benzodiazepines (flurazepam, 90 mg, with diazepam, 35 mg, daily). At the age of 50 she was discharged from out-patient follow-up to the care of her general practitioner on trimipramine (150 mg), nitrazepam (50 mg), diazepam (20 mg), prochlorperazine (20 mg), and betahistine (32 mg). The patient has always smoked 20–30 cigarettes a day. Since her mid-40s abetted by her spouse, her alcohol intake has steadily increased, reaching as much as 20 units a day in the last two years.

The patient was shy, but liked to be the centre of attention in her own circle. From the outset she had a dependent relationship with her husband, and was distant from her children. When she was 49, the hospital social worker for the deaf had commented upon the high level of domestic stress and the husband's threats to leave. It was said by her relatives that she took refuge from her worries in her symptoms.

### Present illness

Against the domestic background described, the family first became aware of more disturbing behavioural changes in February 1986, when the patient was 52. Her husband found her going over her three-times table aloud, which she struggled to get right. Thereafter, he became aware of a gradual decline in her faculties. She would make gross mistakes when laying the table, leave the gas cooker on unlit, and made cold coffee. She had difficulty dressing, and seemed to become forgetful. She began to repeat herself, asking the same question over and over. Her mood would change rapidly from inappropriate happiness to tearful irritability. The change progressed over nine months. There was a diminution in her range of interests, and neglect of personal hygiene. Her husband employed a night-sitter while he was at work.

In July 1986 she was admitted for investigation following a domiciliary visit by a consultant psychiatrist. All physical tests, including EEG and computerised tomography (CT), were normal. Psychometric testing showed generalised intellectual underfunctioning, but normal orientation.

A tentative diagnosis of Alzheimer's disease was nonetheless made. She attended an Alzheimer's disease day centre, where according to staff she behaved similarly to other patients. Problems arose when attempts were made to reduce her medication, unchanged since 1984 (see above). She became increasingly hostile, aggressive, and difficult to manage at home. Once readmitted to hospital, haloperidol (10 mg t.d.s.) settled her disturbed behaviour; repeat EEG and CT were normal.

Two months later, owing to difficulty swallowing and unsteady gait, she again required admission, and at this point she was referred to the Maudsley Hospital for assessment. On arrival she required total nursing care, although as her medication was withdrawn the motor signs resolved, and she was able to walk normally and, with encouragement, dress herself. She continually requested her medication be reinstated. While she was on the ward her husband was a constant visitor, and the nursing staff observed his indefatiguable attentiveness (for example, he would light and hold her cigarettes for her, although she was able to do this for herself).

## Mental state examination

Her speech was dysarthric as a result of poorly fitting dentures. She gave monosyllabic responses, which were often inappropriate and of a clipped, repetitive quality. There was perseveration on verbal tasks, but no dysphasia. She was distractible and disinhibited. Her mood was often labile, and alternated between mild euphoria and tearfulness. There were no depressive or psychotic features.

Cognitive examination was impeded by her distractibility and poor motivation. However, she was fully orientated, and, despite poor attention and concentration, she was able to register and repeat a name and address at one attempt, with full recall at three minutes. She had difficulty in performing complex motor and sequencing tasks. Her general knowledge was commensurate with her educational background.

## Physical examination

On physical examination she had a kyphosis, and prominent corneal arcuses. She was totally deaf in the left ear, and had impaired hearing in the right ear, which was corrected by the use of a hearing aid. There were no primitive reflexes. There were no physical abnormalities in any of the major systems.

### Investigations

Informant histories were obtained from four relatives. The following investigations were normal: full blood count, erythrocyte sedimentation rate, liver function tests, calcium, glucose, lipid studies, B12, folate, thyroid function tests, angiotensin-converting enzyme, porphyrins, autoantibodies, drug screen, poisons screen, copper, lead, syphilis serology, lysosomal enzymes, urine culture, ECG, EEG, chest and skull X-rays. A CT scan showed mild frontal atrophy.

Abnormal macrophage-like cells were seen in the cerebrospinal fluid (CSF) on the first but not subsequent specimens (very large rounded cells with rounded nuclei larger and less dark than in a plasma cell). Oligoclonal banding was absent, and all other studies of the CSF were normal.

Sodium amytal abreaction (amylobarbitone 0.4 mg over 30 minutes) gave a dramatic improvement in the patient's mental state. She seemed an entirely different person. She spoke in a fluent, friendly manner, and her repetitive demands ceased. She apologised for her behaviour, and after the interview she engaged in conversation with other patients for the first time. She was able to lay the tables normally, and washed up after the meal correctly. This state lasted four hours, wearing off slowly and leaving a slight residual improvement. The procedure was repeated five weeks later, but at this stage it made no difference; this may have been due to intervening changes in medication.

The patient was neuropsychologically assessed when she originally presented, and while her pre-morbid IQ was estimated at 109, all other tests indicated performance in the defective range. She was tested at the beginning and end of her stay at the Maudsley Hospital. Her orientation was normal throughout. Initially on the Kendrick battery (Kendrick *et al*, 1979), she scored well in the demented range, with virtually identical scores on two occasions days apart. When tested three months later, there was a 30% improvement, taking her into the non-demented range. Impairment in attention was present at both test periods, and she consistently adopted a poor strategy to copy a complex figure – findings compatible with organic damage in the frontal region.

## Interview

The patient was interviewed by Professor Lishman, her consultant. She entered the conference room unperturbed by the audience, recognised one of her doctors, and kissed him on the forehead. Throughout the interview she paid little attention to the questions posed, but constantly asked for cigarettes and leave to go home. Her cognitive ability, as described above, was demonstrated to the audience.

## Conference discussion

DR MARIA RON *(consultant neuropsychiatrist)*: This case demonstrates the fact that patients become more complex the more complicated the investigations done. The most dramatic feature in her mental state at present is a facile disinhibition. It certainly seems that even at her best over the past months of observation, she has never regained her normal level of function. I believe chronic organic brain disease underlies the clinical picture, although there is no obvious reason why her abnormal personality traits and previous neurotic illness should not colour the presentation. It is also significant that she is deaf. Alzheimer's disease is a possibility, but unlikely. The two other relevant factors are firstly the history of alcohol abuse, which could explain the dementing illness or have at least exacerbated the underlying pathology, and secondly her drug usage, which is possibly relevant to her fluctuating behaviour and certainly the explanation of her earlier extrapyramidal signs. There are too many aetiologies here perhaps!

PROF. LEVY *(professor of old age psychiatry)*: This is definitely not the clinical picture of Alzheimer's disease; for instance she recognised and correctly named her doctor here today. It also seems that in fact her cognitive function has not altered substantially since her first admission in 1963. This woman has probably been ill since her late 20s. It may be a rare degenerative brain disorder, the exact nature of which will remain uncertain, at least in life. The functional disturbance grafted on reflects her pre-morbid personality.

PROF. LANTOS *(professor of neuropathology)*: There is a toxic flavour to the presentation that suggests that alcohol or drugs play a part in the aetiology. Her work in either the chromium plating factory or the dry cleaners may have brought her into contact with potential toxins. Dr Janota noticed the unusual cells in the CSF, which raises the remote possibility of a storage disease. Unfortunately, the repeat samples did not show similar abnormalities, but it would be worth pursuing further, maybe with a rectal biopsy in order to exclude this.

DR JACOBY *(consultant in old age psychiatry)*: I have little to add to what has been already said; only the post-mortem will tell. The case reminds me of the typical Russian addictive personality – they will consume anything they can lay their hands on, including aircraft engine fluid, and give rise to many obscure neurological syndromes by these practices. There may have been some self-administered unknown toxic factor which we will never identify.

DR SAHAKIAN *(lecturer in neuropsychology)*: Recently Dr David Freed [Freed & Kandel (1988)] reported that occupational exposure, particularly to metal vapours and hydrocarbon solvents, was nearly eight times more common in patients with Alzheimer's disease relative to control subjects. Dementia has been described occurring many years after exposure to toxic solvents, and may well be relevant here. It is certainly an area worthy of further study.

DR STEIN *(consultant psychiatrist)*: The management problems to address are presently those of counselling the husband to help him deal with her total dependence on him, and our views on the likely future course of his wife's condition. Also to be considered is the need for some form of pharmacological behavioural control.

The consensus on the diagnostic issue was that this is unlikely to be Alzheimer's disease. The differential diagnosis discussed lay between an early form of non-Alzheimer's frontal lobe dementia, an alcohol-induced dementia, and a dementia due to an environmental toxin. The colouring of the clinical presentation by personality factors and substance abuse was emphasised.

Decisions were made to perform further investigations, including a rectal biopsy to exclude any possibility of a lipid storage disease such as Kufs' disease, single-photon emission computerised tomography (SPECT), and visual-evoked responses.

Trials of a variety of medications were recommended, including chlormethiazole, carbamazepine, sulpiride, and amylobarbitone, with the aims of stabilising mood (her lability was felt to reflect frontal lobe pathology rather than a functional affective state), to control behaviour, and to avoid extrapyramidal side-effects.

## Addendum

A SPECT scan showed no abnormality; in particular, normal anterior uptake was seen. A rectal biopsy gave no diagnostic results, and visual-evoked responses proved normal.

The only effective medication was amylobarbitone. She was discharged on 100 mg t.d.s., which produced a small improvement in mood stability and sleeping pattern, but little change in repetitious behaviour. Over the ensuing four months this was gradually reduced and stopped. The gross features of dementia lifted, leaving minor impairment only. The patient is able now to manage the cooking of simple meals, shopping with her husband, ironing, and writing to people. She remains demanding, however, and is difficult to distract when she has decided she wants something. She remains heavily dependent on her husband, although this is expressed in a more reasonable manner, and the couple's relationship has improved considerably.

The husband was counselled on what to expect of his wife, and given a frank explanation as to our views, that we could not exclude an organic process, but felt physical and emotional dependency had coloured the presentation. He was encouraged to increase her independence.

## Discussion

The case illustrates the value of broad contextual inquiry; valuable insights were gained by exploring the psychosocial context alongside the organic. The potential rewards of such an approach have been alluded to in a recent description of the scope of organic psychiatry, which emphasises that there are "psychodynamic, social and cultural aspects of neuropsychiatry" to be considered (Lishman, 1987).

The point was made in the conference that a final diagnosis would probably emerge only at post-mortem. Brain biopsy has represented the only feasible way of obtaining a neuropathological diagnosis ante-mortem (Sim *et al*, 1966), but with new imaging techniques, brain biopsy has become relatively uncommon.

The clinical utility of sodium amylobarbitone abreaction was instructive, and a case might well be made for its resurrection in selected cases. Amylobarbitone abreaction is reported to improve non-organic psychiatric illness in the context of dementia (Ward *et al*, 1978 (case 1)), and exacerbate certain chronic organic brain syndromes (Weinstein *et al*, 1953).

The patient's pre-morbid personality and marital situation are of considerable interest as factors modifying the form of any putative underlying organic disorder. The patient's emotional problems, including her dependence on her husband, might be reasonably hypothesised to be the cause of her later dependency on drugs and alcohol. In turn, the latter certainly coloured the dementia, but may even have caused it. Some of the potential ways in which psychodynamic and organic factors may interact are thus illustrated; investigations should not be only organic if an entire understanding of the patient is to be achieved.

Should further aetiological understanding be sought? The conference participants made helpful comments on the possible organic pathologies. Candidate processes included alcohol-induced dementia, a dementia produced by exposure to a neurotoxic substance, and a primary dementing process, the presentations being modified by personality, alcohol, and abuse of sedative tranquillisers.

The patient's level of consumption and clinical presentation are consistent with alcohol-induced dementia, in which characteristically only moderate disturbance of brain function occurs, with the potential for reversal in some degree (Lishman, 1981). The CT appearances of more general cortical shrinkage and ventricular dilatation usually, although not invariably, seen in this form of dementia were absent in this patient. The improvement after the withdrawal of the drugs and alcohol is as would be expected; these substances may also be expected to exacerbate an underlying unrelated organic process.

While sedative tranquillisers such as glutethimide and the benzodiazepines are able to cause a degree of cognitive impairment, with long-term use it is less certain that they can cause dementia (Golombok *et al*, 1988). It would be tempting to speculate that the amylobarbitone-induced reversal came about through the temporary reversal of a chronic change in receptor sensitivity, which had been originally induced by drug abuse. Although plausible, such an idea must at present be regarded as speculative.

What of the possibility that this woman may have an underlying organic dementia induced by solvent or metal vapour? Authoritative reviews of the Danish literature on the association between occupational inhalation of organic solvents and pre-senile dementia conclude that the case is unproven (Errebo-Knudsen & Olsen, 1986; O'Flynn, 1988). It should be recalled that carbon disulphide, one of the best-known occupational neurotoxins, is a solvent, and can cause chronic cognitive deterioration even with low-level exposure (Hanninen, 1971). This patient would have been exposed to carbon tetrachloride, which used to be commonly employed in the dry-cleaning industry, but unlike carbon disulphide there are no studies which show chronic cognitive deterioration (Hartman, 1988).

The patient was exposed to the metal chromium while working in a plating works in her youth. A number of metals are associated with the development of dementia. These include iron, lead, manganese, aluminium, copper, and mercury. Chromium is not as yet included, although it has been reported to cause an encephalopathy (Hartman, 1988).

There is a possibility that the patient may be suffering from an unrecognised and insidiously progressive brain disease, such as a storage disease. The first CSF specimen contained abnormal cells, but this was not confirmed on the second tap or by the rectal biopsy.

The case has raised a number of valuable diagnostic and conceptual issues, and demonstrates the complexity of investigating those cases between 'functional' and 'organic' categories of disease. Our conclusions on reviewing the evidence was that this was a woman with an abnormal pre-morbid personality, who developed emotional dependence on her husband, and later dependence on sedative tranquillisers and alcohol. In time, this state coloured a dementing process of uncertain origin. Whether this might have been related to alcohol or any of the other causes of dementia discussed remains an open question. The recognition of the alcohol and sedative tranquilliser abuse and its gradual removal has brought about a partial reversal of the deficit.

An issue remains – might this woman be said to be suffering from pseudodementia? Rather than using the term 'pseudodementia' to describe the association of substance dependency and/or emotional dependency with dementia, we would like to follow the precedent of Folstein & McHugh (1978), and propose the use of the phrase 'dementia syndrome of dependency'. The use of the phrase has the advantage of recognising the association of the two conditions, leaving the clinician to make a full aetiological inquiry, both psychosocial and organic.

## Acknowledgements

We are grateful to Professor W. A. Lishman for chairing the conference, and for his helpful comments on the manuscript. We would like to thank Dr George Stein for referring the case and for his subsequent help in evaluating the patient. Dr I. Janota reported the neuropathological investigations and provided useful comments on the case.

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Editor: Ian Pullen

**Contents:** Multiple personality disorder/Which patients will respond to ECT?/EEG monitoring of ECT/Depression in attempted suicide/Molecular genetics and ethics/Lipid-lowering drugs and violence/Paradoxical intervention/The near-death experience/Affective 'switch mechanisms'/What's so special about two years anyway?/CPK levels and neuroleptic malignant syndrome/Benzodiazepine addiction in heroin addicts/Post-traumatic stress/Listeria and psychiatric syndromes/The Melbourne Maudsleys/The opiate prescribing debate/Children surviving parental murder/Capgras' syndrome and town duplication

## Multiple personality disorder

SIR: I read Fahy's critical review of the diagnosis of multiple personality disorder (MPD) (*Journal*, November 1988, **153**, 597–606) with interest. Unlike him, I believe that the disorder exists; I have knowingly treated seven patients, and suspect I may have failed to treat – or missed – a number of others. As three of the seven patients I have treated are English immigrants to this country, I was interested to learn that only one case of MPD has appeared in the British literature in the past 15 years.

Dr Fahy, as others have done, criticises the diagnosis of MPD because a small number of physicians are responsible for the majority of the research on this disorder, and notes that the media, secondary gain from sick-role privileges, cultural factors, and the promotion of MPD as a high-status disorder may have caused an hysterical symptom to be "precipitously and uncritically inflated to a final diagnosis". I have always wondered why this argument has been applied to the diagnosis of MPD and not to others. For example, it was a small number of researchers who identified panic disorder and determined its pharmacological treatment. The media, on this continent at least, gave more attention to panic disorder than to MPD, and an 'epidemic' of patients appropriately turned up for assessment and treatment. No one suggested that panic disorder was an iatrogenic disorder or that these patients were impressing gullible clinicians.

I believe there are a number of reasons for this discrepancy. Firstly, biological psychiatry is currently in supremacy, and the dissociative disorders require an understanding of, and familiarity with, psychodynamic issues. Secondly, there has been a long-standing disbelief in the dissociative disorders and their clinical presentations, which stems from military psychiatry (Sargent & Slater, 1941) and industrial medicine (Ellard, 1985). However, I believe the major source of scepticism about MPD is not due to the clinical manifestations of the disorder or the diagnostic criteria, but to the fact that invariably, as the history unfolds, the treating physician comes face to face with human brutality in the form of physical, emotional, or sexual abuse perpetrated against a child (Goodwin, 1985).

Dr Fahy concludes his review with Slater's caution that hysteria may be a delusion but also a snare. I wish he had included what Slater stated 17 years later: "As things are, with too little time and too much pressure, we do not listen to half of what our patients tell us; and what we do take in we may distrust or dismiss. We do not allow them as much intelligence and understanding as they usually have. We may not even want them to understand any better. We are, often, unwilling either to tell the full truth or to admit to ignorance" (Slater, 1982).

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SIR: Van Der Hart & Boon (*Journal*, March 1989, **154**, 419) detect a note of ambivalence in my review of the diagnosis of multiple personality disorder (*Journal*, November 1988, **153**, 597–606), and hope to help me by prescribing a careful reading of Janet's contributions on the subject. However, my examination of these references reveals an attitude of ambivalence on the part of Janet, not mentioned by the above authors, and makes me think that I may be in good company. In his book *The Major Symptoms of Hysteria* Janet (1965) appeared to be puzzled, as are many latter-day critics, by the remarkable concentration of cases in America, the bizarre symptomatology, and the "mystic admiration for the subject, an exaggerated seeking after surprising and supranormal phenomena" which was evident in the case descriptions of the time. He also emphasised the rarity of genuine cases of multiple personality. He commented on the effects of elaborate exploration and naming of the alternate personalities when he wrote, "Once baptised, the unconscious personality is more clear and definite; it shows the psychological traits more clearly" (Janet, 1989). While he may have thought this was a good thing, Janet may have been detecting a tendency for therapists to reinforce the symptoms or add to their complexity.

It is clear from hysterical and contemporary reports that the symptoms of MPD present against a background of a wide variety of psychological symptoms and underlying psychiatric disorders. Drs Van der Hart & Boon agree that the DSM–III and DSM-III-R criteria for MPD are vague, and imply that the diagnosis is probably overused in the USA. Transient dissociative reactions such as the case reported by Fahy *et al* (1989) would meet the current diagnostic criteria. These cases may respond without resorting to specialist MPD treatment programmes. This makes nonsense of the assertion that the diagnosis is necessary or justified as a way of identifying the most apt type of treatment. Until the advent of improved diagnostic criteria and convincing evidence about the comparative efficacy of different types of treatment, the literature on this topic will remain confusing and frustrating. A certain amount of ambivalence is probably inevitable, and may be a lesser failing than the dogmatism and loose scientific standards which have been commoner failings in this field.

Dr Fleming suggests that MPD has been unfairly picked on when the influence of pathoplastic factors such as cultural and iatrogenic factors are exaggerated in this case, but are ignored when it comes to other conditions such as panic disorder. It would be mischievous to argue that the publicity given to panic disorder matched that given to MPD. The numerous documentary, fictionalised, and cinematic depictions of MPD have been assimilated into public awareness and have probably affected the public perception of all psychiatric disorders. The potency of recent well-publicised cases to excite the public imagination was clearly demonstrated by the "thousands" of self-diagnosed cases who contacted the authors of *The Three Faces of Eve* following the book's publication (Thigpen & Cleckley, 1957, 1984). The authors, whose diagnostic criteria for MPD are very stringent, considered only one of these cases to be genuine.

I do not 'disbelieve' in dissociative disorders as Dr Fleming suggests. Indeed, the critics of the diagnosis of MPD believe that the patients present themselves to psychiatrists with a complex history of dissociative symptoms. What I am proposing is that one set of symptoms are being seized upon, and are possibly elaborated in therapy. The logical conclusion of any other position is to suggest that each dissociative symptom merits a completely separate diagnosis. While I agree with Slater's sentiment, quoted by Dr Fleming, that we should listen closely to our patients, I suspect that Slater himself would have taken a jaundiced view of much of the literature on MPD. Indeed, in the article from which Dr Fleming selectively quotes, Slater (1982) emphasised the risk that the hysterical symptoms themselves, especially if viewed as the final diagnosis, become a way of "avoiding a confrontation with our own ignorance" and are consequently one of the main obstacles to communication and mutual understanding.

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## Which patients will respond to ECT?

SIR: Scott (*Journal*, January 1989, **154**, 8–17) suggests that a rise in prolactin levels following ECT may be a response to the stress of the ECT procedure, and supports his argument by citing Deakin *et al* (1983), who showed that simulated ECT increases plasma prolactin concentration twofold. However, what Dr Scott fails to mention in his article is that Deakin *et al* also showed a sixfold rise in plasma prolactin concentration following real ECT. The difference in the rise of prolactin between the two procedures was statistically significant, which allowed Deakin *et al* to conclude that the pattern of hormonal changes following ECT are specific to ECT and not simply an effect of stress. The most consistently reported endocrine effect of ECT is a rapid increase in plasma prolactin, and in fact it is so consistent and characteristic that Trimble (1978) suggested that a plasma prolactin increase may be used to differentiate an epileptic fit from hysteria.

With regard to the TRH stimulation test, and its usefulness in identifying depressed patients who will recover with ECT, we would like to draw Dr Scott's attention to Krog-Meyer *et al*'s (1984) study, which reported the results of 39 patients with unipolar depression who recovered after ECT. TRH tests were carried out before and after a course of ECT treatment. All patients received maintenance amitriptyline for 3 weeks, and then were assigned to one of two groups: one group showing an increase in Δmax TSH response to TRH greater than 2.0 mIU/ml after ECT, and the other showing a lesser increase in Δmax TSH. The first group and half of the second group received placebo for the next 6 months; the other half of the poor TSH responders received amitriptyline. At the end of 6 months the TSH response tests were repeated, and all patients received no further medication for 6 months. After 6 months, 3 of 15 patients in Group I, and 9 of 13 patients in Group II who received placebo, relapsed, while only 2 of 11 patients in Group II who received amitriptyline relapsed. The authors concluded that failure of TSH response to TRH to normalise is a poor prognostic sign in depressed patients treated with ECT and, furthermore, that maintenance with amitriptyline may prevent relapse.

The amount of cortisol released during the course of ECT may have a relationship to outcome, and in this context we would like to cite Swartz & Chen (1985), who showed that 10 of the 11 patients who responded to ECT had a progressive fall in the amount of cortisol released during the ECT course, while one non-responder showed an increase in the amount of cortisol released after the last treatment compared with the first.

In relation to EEG studied in ECT, Scott fails to mention the important work of Strømgren & Juul-Jensen (1975), who concluded that following a course of ECT, the therapeutic effect of ECT is positively correlated to the incidence and degree of EEG changes. In this study, the importance of obtaining strong universal seizures was emphasised. Failure to elicit such seizures can lead to inefficient and ineffective treatments which prolong the duration of a course.

Finally, regarding seizure threshold, preliminary results of a study we are conducting suggests that although there is a wide variation in baseline seizure threshold, patients who respond to ECT and who maintain this response at six months are those whose seizure threshold rises significantly over the course of their treatment.

Obviously, the whole area needs further exploration and it is difficult to draw any firm conclusions at this stage.

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SIR: I was interested to learn of the work of Dr Yatham *et al* concerning seizure threshold and prolonged recovery after ECT. The correspondents also highlight a few of the many physiological changes that occur during a course of ECT.

My review focused on the everyday clinical problem of predicting which treatment will be best for a particular depressed patient. If the aim is to predict, or foretell, then the observation on which the prediction is based must be made before, or at the outset of, treatment. Only one of the measures cited (the release of prolactin) can be made at the first ECT; the other measures can only be made once treatment is complete and cannot be predictive. Prediction of relapse after successful treatment is another important clinical concern, but one I did not cover in my review. Concerning the release of prolactin after ECT, I do not doubt that real ECT produces a greater increase than simulated ECT.

For reasons I have already given in the review, I cannot recommend any of these biological measures to clinicians to improve their ability to select depressed patients who will recover after ECT.

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## EEG monitoring of ECT

Sir: McCreadie *et al* (*Journal*, February 1989, **154**, 229–231) propose a case for routine EEG monitoring of ECT, particularly for unilateral treatments. However, there are certain flaws in their paper.

Firstly, Dr McCreadie *et al* have misquoted the findings of Christensen & Koldbaek (1982). They state that Christensen & Koldbaek found 43% of fits inadequate in terms of EEG signs when judged by clinical observation alone. In fact, they reported the opposite: 43% of fits were inadequate as judged by the clinical method, but only 9% were inadequate by EEG criteria.

A further misconception concerns the ability of the EEG to demonstrate all seizure activity. Where disagreement arises between the EEG and clinical methods as to whether a seizure has occurred, Dr McCreadie *et al* unjustifiably assume that the EEG finding is correct and the clinical method false. One type of disagreement (no EEG fit/clinical fit) is interpreted as clinical misdiagnosis of a seizure. However, it is well recognised that seizure activity is not always visible even on a conventional multichannel EEG, let alone the single channel used by the authors. It is questionable whether two bifrontal EEG leads will reliably pick up seizure activity, as the potential difference between the EEG electrodes may be equal in a bilateral seizure. Furthermore, as seizure activity progresses through the cerebral hemispheres, the precise duration of a seizure cannot be demonstrated by a single channel EEG.

The authors state that if only EEG seizures lasting over 25 seconds are counted, disagreement between the EEG and clinical method increases. However, this remark is tautological, since clinical seizures were not measured. In fact, Dr McCreadie *et al* have shown that, as far as eliciting whether a seizure has occurred is concerned, the EEG and clinical methods agree in the vast majority of cases, with no significant difference between bilateral and unilateral treatments (97.5% and 92% respectively). Thus the conclusion that unilateral ECT requires EEG monitoring seems unwarranted from their data.

Finally, I should like to contribute some points, derived from my own experience (Jones, 1988), to counterbalance the argument that EEG monitoring of ECT is clinically useful.

Firstly, reliable performance of EEG electrodes requires time-consuming preparation of the scalp. In practice, this means that the EEG electrodes and leads have to be attached to the patient prior to anaesthesia. In my experience patients, who are already apprehensive about ECT, find this procedure distressing.

Secondly, frontotemporal EEG electrodes can obstruct the correct application of the ECT electrodes.

Thirdly, mains-powered EEG machines which are not designed for use with ECT are potentially dangerous if so used. This is because, unless the mains connections are electrically isolated, there would be a possibility of the electroshock short-circuiting from a scalp electrode to earth through the EEG machine, which could result in electrocution of the patient. I overcame this problem by adapting a battery operated audible biofeedback machine for monitoring of ECT. Two of the more recently developed ECT devices, the Thymatron and the MECTRA, incorporate a single lead EEG and have circuitry to eliminate electrical errors of this kind.

Fourthly, few junior doctors administering ECT are proficient in reading the EEG. Moreover, preoccupation with the EEG display can detract from their attention to the clinical care of the patient.

Unfortunately, not all anaesthetists are aware of the importance of timing seizure duration in ECT, and therefore sometimes fail to adjust the dose of muscle relaxant during a course of ECT. However, with judicious use of anaesthetic agents, clinical monitoring of seizure duration is usually possible. The case for EEG monitoring of ECT remains unproven.

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SIR: Dr Jones has suggested we have misquoted Christensen & Koldbaek (1982). Not so. Perhaps the insertion of two commas might help her understand the sentence "... found 43% of fits inadequate, in terms of EEG signs, when judged by clinical observation alone".

It is widely accepted that EEG monitoring provides the most accurate measure of seizure activity. For better or worse, we used it as the standard by which we judged clinical recognition. Thus, to be consistent, no EEG fit/clinical fit is interpreted as clinical misdiagnosis of a seizure.

A tautology is "saying the same thing twice over in different words" (*Oxford English Dictionary*). We fail to see how *changing* the definition of an EEG seizure and looking again at clinical seizures is tautological.

Dr Jones has read correctly our paper when she says that in the vast majority of cases EEG and clinical methods do agree. Disagreement in 8% of unilateral fits suggests to her that EEG monitoring of unilateral ECT is unwarranted. That is debatable. Ten of 17 patients given unilateral ECT had at least one EEG monitored fit of less than 25 seconds. If fit length is therapeutically crucial, we repeat our suggestion that the case for routine EEG monitoring is then greatly strengthened.

Dr Jones has encountered practical difficulties in EEG monitoring. Such difficulties may exist, but can be overcome. ECT is an important treatment, and it behoves all of us to examine closely our clinical practice.

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## Depression in attempted suicide

SIR: Ennis *et al* (*Journal*, January 1989, **154**, 41–47) state that our study of patients who had attempted suicide (Goldney *et al*, 1981) "reported the highest prevalence of depression". This is demonstrably not so, as two of the five other studies they quote in their Table II found an even higher prevalence of depression.

In considering the different sub-types of depression, there appear to be data missing from their Table I. Dr Ennis *et al* noted that our figure for the delineation of endogenous depression, 36%, was higher than those for affective disorder or endogenous depression detected by others, which were of the order of 10–17%. Their results are also appreciably greater than those previous results, but they have chosen to report them as indicating that "only" 31% were diagnosed with a major depressive episode.

They correctly acknowledge the problems of nosology of depression, and suggested that, "since only 8% of the sample met criteria for melancholia, bipolar illness or major depression with psychotic features, the rate of 'endogenous' depression can be assumed to have been low". This appears to be an unnecessarily restrictive assumption. Indeed, their figure of 31% is not dissimilar to the 36% of our subjects who were delineated as having "endogenous" depression, based on responses to the Levine-Pilowsky Depression (LPD) Questionnaire (Pilowsky & Boulton, 1970). At the very least, it can be asserted that the symptoms which contributed to that allocation of diagnosis by the LPD, and which were described in an earlier Australian study (Goldney & Pilowsky, 1979), are similar to those required for a DSM–III diagnosis of major depression.

The significance of individual symptoms in depression has long been debated. Pollitt (1971) postulated the concept of a "depressive functional shift" to describe the physiological symptoms which delineate depressive illness, and noted that it was an attempt "to find a nucleus of depressive illness; a timeless clinical index which, while being independent of culture and era, could be confidently assessed and communicated". He added that the value of the concept was that "a functional shift, however small, could be useful in distinguishing depressive illness from natural unhappiness". The symptoms employed by Dr Ennis *et al* to fulfil DSM–III criteria for a major depressive episode and those employed in our study to delineate endogenous depression are consistent with Pollitt's "depressive functional shift".

It is tempting to draw an analogy between angina and myocardial infarction, with the 'functional shift' of symptoms of depression being analogous to angina. Cardiologists have the benefit of electrocardiogram and enzyme changes to delineate the boundary between angina and infarction; psychiatrists as yet have no such instruments to provide precise delineation between the symptoms of the 'functional shift' and a depressive illness.

The above points are somewhat speculative. What is not speculative is the manner in which Dr Ennis *et al* have reported that "only" 31% of their subjects were diagnosed as having a major depressive episode, despite their figure being higher than a number of other studies. A different interpretation of the results could be that no less than 31% of an essentially unselected group of subjects who had attempted suicide suffered from a syndrome of depression which carries a considerable degree of morbidity and mortality, and for which we have, for the most part, effective treatments.

The adequate treatment of depression remains the most effective way in which we as clinicians can assist suicidal patients. The word "only" in this context appears to be singularly inappropriate.

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## Molecular genetics and ethics

SIR: I would like to take up the issues aptly raised by Pelosi (*Journal*, October 1988, **153**, 570) and David (*Journal*, January 1989, **154**, 119) and suggest that the ethical implications of the new genetics are of immediate importance, not least because its practical implications have been quickly grasped by those such as insurance companies who play a significant role in the provision of health care in the Western world, if not yet in Britain.

Abuse of new technology is rarely the sole prerogative of doctors. (On the evidence of past enquiries, the public have more to fear from backward than enlightened practitioners, but that is another story.) Ethical abuses depend as much, if not more, on the ideological climate in which the advances occur. The real life counterparts of Drs Moreau and Frankenstein prosper under suitably unethical political regimes. Psychiatrists must ask themselves what implications the current ideological views of health care will have on the new genetics.

This is especially important in view of the fact that these advances promise more than they can, in the short term, deliver. They do not currently hold out any early hopes for treatment, nor do they, if the chromosome 5 studies are representative, imply a simple correspondence between genetic lesion and diagnostic category, an important caveat given the variety of impairments and prognoses across categories. Their preventitive power is constrained by the multiplicity of causes for mental illness and its link with further ethical questions surrounding procedures such as abortion. What they do offer, and what will no doubt be seized upon, is increased predictability of general morbidity within, and possibly outside, the affected pedigree.

The effect of all this in the current ethos may be unfortunate. In emphasising the predictable, and therefore inevitable, aspects of mental illness we do not put ourselves in a strong bargaining position for resources, but improve the position of those who might wish to further limit the amount of money spent on the mentally ill and see in the new discoveries both a reason for, and a potential means of, doing so. Genetic approaches to the mentally ill have an unpleasant social history, and given the above it is easy to see why.

Outside science fiction, ethical choices for doctors are not simply between hubris and humility but a more insidious business of resisting the carrots and sticks of ideology. In the present case the carrots may be more visible than the sticks: there are enough pedigrees, mental illnesses, and slots on the 23 chromosomes to occupy researchers well into the 23rd century. This is all the more reason for collective responsibility. This might entail: (a) strong guidelines on the use of predictive tests; (b) a monitoring of future research to ensure a balance with management issues, be they psychological, social, or physical; and (c) a reasoned debate on where these advances are leading, especially with regard to the everyday clinician and his patients. The most obvious source of such an initiative would be the Royal College of Psychiatrists.

Although some of the above smacks of Luddism, I hope it challenges enough to stimulate a discussion which, as your previous correspondents suggest, is overdue. Whatever history says about us, it will not accept the excuse that we were taken unprepared.

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## Lipid-lowering drugs and violence

SIR: I was interested to see the letter from McLoughlin & Clarke (*Journal*, February 1989, **154**, 275–276). I agree that this is an important topic. Among the 7887 men in the two lipid-lowering drug trials mentioned (Lipid Research Clinics Program, 1984; Frick *et al*, 1987), there was an excess of 17 coronary deaths in patients assigned to placebo as compared with those assigned to the drug, but there was an excess of 13 violent deaths in those assigned to the drug. Since there was an excess of 8 other deaths in the drug groups, there were overall 4 more deaths in the drug than in the placebo groups.

Thus lipid-lowering drugs are not saving lives. At best they are merely changing the cause of death. It is therefore of major importance that they should not be causing side-effects which may change the quality of life for patients and those close to them. Death is an extreme outcome of violent or impulsive behaviour. Drugs which increase violent deaths are also likely to produce greater increases in milder forms of violence, leading to more aggression at home and at work, more abuse of spouses and children, and generally more unhappiness.

There is other evidence, not mentioned by Drs McLoughlin & Clarke, which supports the relationship between violence and lowered cholesterol levels. Virkkunen, a forensic psychiatrist from Finland, was the first to draw attention to this when he noted unusually low blood total cholesterol levels in men who had committed violent and impulsive crimes, including murder (Virkkunen, 1983). He then went on to study aggressive children and found a similar relationship there (Virkkunen & Penttinen, 1984).

This is a potentially serious problem in view of the likely rapid increase in the numbers of men taking lipid-lowering drugs, and the likely lack of attention which will be paid to violence as a possible side-effect. It deserves serious investigation by psychiatrists concerned with aggressive behaviour.

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## Paradoxical intervention

Sir: Adshead *et al* (*Journal*, December 1988, **153**, 821–823) describe the use of paradoxical intention in a non-compliant ritualiser. It is assumed in the report that the patient relapsed after initial improvement with behaviour therapy because she did not comply with instructions given. The paradoxical intervention (which took the form of 'masterly inactivity' being formally recommended by the psychiatrist) produced a successful outcome, but the authors drew attention to the discomfort experienced by both the patient and the treatment team concerned.

Paradox is a useful therapeutic technique (Cade, 1979). However, it is not a single prescriptive act or magic formula. Paradox is part of a therapeutic programme requiring a sensitive adjustment to the patient's needs and a recognition of the importance of the patient's attitudes to the problem, the treatment, and the therapist (Fisch *et al*, 1982). For best results, improvement should be greeted with caution, puzzlement, and an (apparent) acceptance that the patient's recovery is due to factors other than the therapist and the intervention.

This flexible and understated response is hard for eager therapists to apply, but often serves to avoid the reactions described in this interesting report.

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## The near-death experience

Sir: In their thorough and timely review of the near-death experience (NDE), Roberts & Owen (*Journal*, November 1988, **153**, 607–617) note that the dissociative anaesthetic ketamine can reproduce many of the features of the NDE. Several recent discoveries in neuroscience suggest a physiological explanation for at least some NDEs which involves a ketamine binding site in the brain.

Like its congener phencyclidine (PCP, 'angel dust'), ketamine can bind to a site on the N-methyl-D-aspartate (NMDA) receptor (Sonders *et al*, 1988). Many of the substances which bind to this site are also powerful dissociative hallucinogens. There has been an enormous increase in research activity involving the NMDA receptor, as it has been shown to be implicated in excitotoxic brain damage, epilepsy, learning and memory, and possibly psychosis (Barnes, 1988).

The neurotransmitter at NMDA receptors is probably L-glutamate, an excitatory amino acid which may kill the neuron if present in excess ('excitotoxicity'). Blockade of the receptor by ketamine can prevent this damage, which occurs in ischaemia, epilepsy, and other conditions (Barnes, 1988). Thus an endogenous blocking agent would have neuroprotective properties. An endogenous agent, which has been labelled 'alpha endopsychosin' (Quirion *et al*, 1984), has in fact been discovered for the PCP site. It is thus possible that a flood release of alpha endopsychosin could serve the function of reducing excitotoxic damage in the ischaemic brain, for example in the situation of a cardiac arrest. A by-product may be a temporary, dissociative hallucinogenic effect on consciousness. This is a more specific version of Carr's (1981) theory concerning the secretion of psychoactive peptides in stressful situations. However, while the endorphins, as suggested by Carr, may play a role in the NDE, they are not usually regarded as potent hallucinogens, unlike many of the substances active at the PCP binding site.

A further matter to consider is the possible role of this site in the formation and retrieval of memory. In his discussion of the psychological bases of the NDE, Siegel (1980) suggested that memories may normally be suppressed by a mechanism which acts as a gate to data from the outside. If this external input is decreased (as occurs in the patient who has had ketamine) while awareness remains, stored perceptions are released and may be dynamically organised. Blockade of NMDA receptors, by ketamine or perhaps alpha endopsychosin, suggests a neural substrate for the 'gate' of the sensory deprivation theory – i.e. it closes the 'gate' to external input so that old memories come to the fore instead, a feature of some NDEs.

In conclusion, the NDE is an entity of considerable interest and it may be of some value to apply the recent explosion of knowledge in neuroscience to our attempts to understand the phenomenon. Elucidating the properties of the endopsychosins, and the development of substances which are more specific for the PCP site (ketamine also binds to several other sites), may be of some value in this attempt.

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## Affective 'switch mechanisms'

SIR: The notion of "switch mechanism" in affective disorders (Carney *et al*, *Journal*, January 1989, **154**, 48–51) is a challenging one, with both theoretical and clinical applications. I am sceptical about the conclusion that because "S-adenosyl methionine enters the CSF, is linked with CSF 5HIAA and folate metabolism, and influences prolactin" these "suggest an effect on dopamine metabolism" and the "dopamine system should be further explored".

I do agree that the dopamine system is an important neurotransmitter in the study of affective disorders, but I do not see the results of these open trials as being sufficient to highlight solely the role of dopamine and not serotonin if we have to concentrate on either.

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## What's so special about two years anyway?

SIR: One of the most important criteria to be taken into account when assessing a patient for psychosurgery is that all reasonable treatments should have been tried and failed. In other words, the patient needs to have a treatment-resistant illness, usually depression, and some describe this as chronic depression. I was therefore interested in Dr Scott's review article with the title 'Chronic depression' (*Journal*, September 1988, **153**, 287–297).

Dr Scott accepts the definition of chronicity, previously suggested by others, as "symptomatic non-recovery for a period of two or more years". She goes on to consider the factors that may relate to chronicity, which include – among others – the illness (length of episode, course, symptom profile, etc), treatment, family and personal history, and personality.

The treatment aspects, which include inadequate and inappropriate treatment, do not appear to be given any weighting over and above the other factors. Yet treatment is the only aspect that can be decisively influenced by the clinician. He cannot alter the symptom profile, the past history nor the pre-morbid personality. But he certainly can treat adequately or inadequately and Dr Scott herself gives many references reporting examples of substandard treatment, subtherapeutic doses of antidepressants and even no treatment at all. Her observation that, "it is noteworthy that the introduction of a wide variety of new treatments has not significantly altered the prevalence of the disorder" may be true, but introducing new treatments does not ensure that they are used effectively.

Therefore, a span of two years before depression can be considered as chronic seems entirely arbitrary and without clinical meaning unless it is linked to the use of some defined and potent forms of therapy. The opinion that, "with regard to depression being treatment-resistant, the definition of the term is problematical as there is little agreement on the . . . treatments that should be used" simply evades a fundamentally important issue. For example, we now regard it as essential for a combination of tryptophan, clomipramine, and lithium (Hale *et al*, 1987) to be tried unsuccessfully before a patient with an affective disorder is considered for psychosurgery.

A textbook of psychiatry (Gelder *et al*, 1983) observes of psychosurgery that "the operation should never be carried out until the effects of at least a year of vigorous in-patient treatment has been observed". I would agree if this meant that one year of intractable illness is usually the minimum in practice before psychosurgery should be seriously considered. But it could mean that, regardless of the clinical circumstances, the patient must wait for at least a year. Similarly, another textbook (Kendell & Zeally, 1988) takes this unit to task for stating that we would, if it were clinically indicated, assess a patient for psychosurgery less than one year after the onset of the illness and this, the authors observe, seems unjustified. Treatment-resistant depressions of that duration are not uncommon and spontaneous remission does occur". This has the rigidity that I am concerned about. The authors are likely to find it more comfortable to wait a full year than some severely depressed patients would. Surely the patient can be allowed to decide when distressing symptoms are quite intolerable, especially when the doctor has been unable to prove relief. Linking treatments to arbitrary periods of time is an autocratic and not particularly logical way of managing psychiatric illnesses.

For psychosurgery to be appropriate, the essential needs are for an appropriate and truly intractable illness (intractability will take time to be sure of, it is true) and a really desperate and incapacitated patient. But the time factor alone is not at all the issue. I believe that the shortest illness from onset to surgery that we have treated was about 10 months. During this period, earlier responses to antidepressant medication and ECT were soon lost. Suicidal drive and weight loss due to depressive anorexia became major and increasing problems. Why should we have waited a further therapeutically sterile two months, even although remission *might* have occurred?

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## CPK levels and neuroleptic malignant syndrome

SIR: I read with great interest the two cases presented by Goldwasser *et al* (*Journal*, January 1989, **154**, 102–104). Their correlation of creatinine phosphokinase (CPK) profiles with clinical state and drug treatment is convincing – perhaps too convincing. Their findings certainly support the idea that elevated CPK values are a major sign of NMS and should be considered as 'classic'. However, moderate increase of MM isoenzyme fractions of this enzyme is also found in muscle injury, physical exertion, muscle cramping, intramuscular injections, and acute psychotic episodes (Zilva & Pannall, 1981).

The cases presented by the authors are young black males with features of rigidity, acute psychosis, and severe aggression, requiring forceful restraint and intramuscular injections. In spite of their impressive demonstration of "CPK steadily falling toward normal – even with the use of intramuscular medications and restraints" (case 1), is it not necessary to correct for these and other factors that contribute to rising CPK levels? Or are they not significant here? What are the levels and mode of degradation of CPK in black, aggressive psychotic patients needing restraint, but without NMS?

It seems difficult to accept the elevation of CPK as a 'classic sign' of NMS when so many other variables are present and the fluctuation of enzyme in psychotic patients without NMS is not investigated.

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## Benzodiazepine addiction in heroin addicts

SIR: The recent article by Gossop *et al* (*Journal*, March 1989, **154**, 360–363) on opiate withdrawal symptoms was broadly in keeping with previous work showing that 80% of heroin addicts could be withdrawn as in-patients using methadone, and also that withdrawal symptoms have a large psychological weighting and are therefore more severe around the time of completion of the programme. The 10-day withdrawal regime was, however, associated with a higher drop-out rate soon after, and as they point out, this is likely to be due to variables other than opiate withdrawal.

There has been little work on why 20% of addicts fail to finish their detoxification, and it would prove methodologically difficult to study this adequately. One possible reason that might account for a proportion of the 20% would be concurrent benzodiazepine addiction, and this might also explain some of the cases of higher relapse after the 10-day detoxification.

A study of 298 addicts attending the drug dependence unit at St George's Hospital, London, found benzodiazepines in the urine of nearly 60% (Beary *et al*, 1987), and in a study of 79 addicts in Sheffield, 90% said that they used benzodiazepines, with regular use in about 50% (Perera *et al*, 1987). Rebound anxiety can occur if benzodiazepines have been used for three weeks, and about half of patients who have taken them for three years experience a specific withdrawal syndrome (Noyes *et al*, 1988). If we hypothesise that 30% of benzodiazepine users experience rebound anxiety or a withdrawal state on abrupt discontinuation, and that 50% of addicts take benzodiazepines, then we could expect 15% of heroin addicts to experience some form of withdrawal reaction if detoxified using methadone alone.

The symptoms of rebound anxiety and some of the symptoms of benzodiazepine withdrawal would lead to a score on the Opiate Withdrawal Scale, but the perceptual abnormalities seen in benzodiazepine withdrawal would not. The symptoms, however, would not necessarily respond to methadone. With short-acting benzodiazepines, a withdrawal reaction may be seen within 24 hours. For the more commonly used benzodiazepines, however, they are more likely to present at about 5 days and peak at about 10 days. The combination of this and finishing the methadone withdrawal regime, which is a psychologically difficult time for the addicts, may partly explain the higher drop-out rate in the 10-day withdrawal group than in the 21-day programme in the study of Dr Gossop *et al.*

I feel that this is an aspect of opiate withdrawal that warrants further attention if we are to successfully treat heroin addicts.

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## Post-traumatic stress

SIR: McFarland (*Journal*, February 1989, **154**, 221–228) comments that past history of treatment for psychological disorder was a better predictor of post-traumatic morbidity than the degree of the exposure to the disaster or the losses sustained. He suggests that his results raise doubts about the postulated central aetiological role a traumatic event plays in the onset of morbidity.

In my study of burn victims who had been admitted for seven days or more to a burns unit (White, 1981), over a third of 86 patients who were followed-up one year after their accident had marked psychological sequelae. Only three of those patients had a past psychiatric history of a neurotic illness (requiring admission to hospital or two or more psychiatric consultations). The main predictors for a poor psychological outcome after a year were the severity of the injury and the length of stay in hospital. The presence of anxiety, depression, or a personality problem at the time of the initial interview (within seven days of the accident) was also related to an increased incidence of psychological sequelae. Other factors found to be important were age, social class, and whether patients lived on their own or had large families. There was also no clear relationship between the area of injury and the frequency or severity of psychological after-effects.

Thus, although I would accept that premorbid vulnerability may indeed be an important predictor of psychological outcome following a frightening event, the overwhelming majority of victims in my study who developed post-traumatic stress did not have a past psychiatric history.

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White, A. C. (1981) *Psychiatric Study of Severely Injured Burn Victims*. MD Thesis, University of Birmingham.

## Listeria and psychiatric syndromes

Sir: In view of the recent publicity given to the almost forgotten listeria monocytogenes, it might interest psychiatrists to know that outwith the British Isles this bacterium has been incriminated as the causative agent in a wide variety of psychiatric syndromes. Although abortion most readily springs to mind in association with listeria, studies have shown that the syndrome most commonly occurring in man is the meningeal encephalitic form (Seeliger, 1958; Colmant, 1961). As would be expected, psychiatric syndromes are described in cases where the condition has become subacute and chronic.

In the German literature, Lang (1955*a*) described five children who had raised listeria titres in the course of recurrent bouts of disturbed behaviour with screaming and temper tantrums, all of which disappeared after adequate treatment with antibiotics. Lang (1955*b*) also claimed to have found a high incidence of raised listeria titres among a group of 300 children from the Bonn area suffering from different types of brain damage. Seeliger (1958) described a patient who in the course of a recognised listeriosis infection developed a manic illness which lapsed into a chronic depressive state and eventually led to suicide. In the Russian literature, Timofeyeva *et al* (1953) described three cases presenting with predominantly schizophrenic symptoms. Recurrent bouts of temperature together with a raised listeria titre strongly suggested that listeria was responsible for the psychiatric symptoms.

So far listeria seems to have made little "headway" in Britain, and hopefully this will continue to be the case. However, Colmant (1961) warned that although listeriosis is an illness resembling tuberculosis and syphilis in its complexity, its diagnosis depends on the familiarity of the doctor with the illness. Listeria fell from grace and general interest after it was found not to be the cause of infectious mononucleosis in man, following its original discovery in 1924 in Cambridge by Murray *et al* as a monocytosis producing bacteria in laboratory rabbits. However, given its known predeliction for soft cheeses, perhaps it now merits shortlisting as a possible causative agent in psychotic gourmets.

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## The Melbourne Maudsleys

Sir: Readers of Henry Maudsley's autobiography in the *Journal* (December 1988, **153**, 736–740) may be interested in some further family history. Maudsley paid a visit to Australia in 1903, apparently to see "the best of cricket in its best home". I wonder, however, whether the visit offered an opportunity to meet his nephew, also Henry Maudsley (1859–1944) and his great-nephew, Henry Fitzgerald Maudsley (1891–1962). Both Australian members of the Maudsley family were prominent physicians, with the younger Henry being a key figure in the development of Australian psychiatry.

Henry Maudsley (1859–1944), like his uncle, was born in Yorkshire, near Settle. He obtained his MB BS at the University of London in 1881. Again like his uncle, some 30 years previously, he was a medical officer at University College Hospital. He migrated to Australia and settled in Melbourne in 1888. In 1903 he joined the staff of the Melbourne Hospital and was Lecturer in Medicine in the University of Melbourne. He became a leading consultant physician and, unlike his uncle, was knighted (Obituary, 1944).

A short biography of his son, Henry ('Hal') Fitzgerald Maudsley, has recently been published

(Sinclair, 1988). He graduated in medicine at the University of Melbourne in 1915 and received his MD in 1920. He then worked in London and obtained the DPM in 1921, after spending some time at the Bethlem Hospital. He also obtained the MRCP in 1922 and FRCP in 1937. In 1938 he became a foundation Fellow of the Royal Australasian College of Physicians. He was awarded the Military Cross in the First World War for exceptional bravery.

Maudsley returned to Melbourne in 1923 where, in the words of one of his contemporaries, he "screwed a modest shingle on his father's residence in Collins Street [the local equivalent of Harley Street] and proceeded to divest the suckling infant of psychiatry of its swaddling clothes and present its dimpled features to a somewhat incredulous profession" (Ellery, 1956). He was a pioneer in launching psychiatry beyond the medical backwater of the asylum, extending its boundaries beyond the certification and custodial care of the insane. Through considerable effort and by his ability to command the respect of medical colleagues and of his larger society, he demonstrated psychiatry's place as properly within medicine and showed that it was humane, and relevant to those with mental disorders far short of gross insanity. In 1923, the year of the official opening of the Maudsley Hospital in Denmark Hill, he established the first psychiatric unit in a teaching hospital in Victoria – an out-patient clinic at the Melbourne Hospital. There he developed general hospital psychiatry along modern lines.

It is generally agreed that Maudsley conceived the idea for, and initiated the first meeting of, the Australasian Association of Psychiatrists in 1946 (Williams, 1963). The Association was at first based in Melbourne, in fact often meeting in his rooms in Collins Street. He was uniquely honoured by being elected President twice. Furthermore, through this initiative he became, in effect, the founder of the Royal Australian and New Zealand College of Psychiatrists which arose in 1964 from the Australasian Association of Psychiatrists in a manner forseen by him. He has been honoured for this contribution by having the headquarters of the College (Maudsley House) named after him.

Consistent with his awareness of the social implications of psychiatry, he was in 1931 one of the founding fathers, and later President, of the Victorian Council of Mental Hygiene, an organisation which brought together representatives from disciplines and bodies relevant to the problems of mental illness, both state and voluntary.

Maudsley was also an exceptional sportsman as well as a prominent figure in Australian society, becoming, like his father before him, President of the Melbourne Club.

It appears that Maudsley did not have the same philosophical bent as his great-uncle, and he wrote relatively little (Maudsley, 1929, 1948, 1950, 1957). Indeed, he provides a rather strong contrast. His contributions were those of an optimistic vision of what psychiatry could become (as the papers cited clearly reveal), an ability to inspire others, and of action. He anticipated the major directions psychiatry was to take in the succeeding half century and acted as a major catalyst in their unfolding.

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## The opiate prescribing debate

SIR: At a recent conference organised by the College and the Department of Health, I heard eloquent pleas for a return to the British system of opiate prescribing, the change being justified because of the need to contain HIV infection. It was also suggested that there was so much illicit opiate available that there would be no danger of medical prescription creating more addicts. I think it would be useful if there was wider debate about this, in particular to see if there is any scientific evidence to justify what seems a purely emotive response. There is little consensus which would justify giving alcohol to alcoholics, but there seems to be no scientific information which would allow us to prove or refute the proposition that the nature of drug addiction problems are different.

Medical thinking is rarely scientific and unclouded by emotion, as is shown by the problems of evaluating safety in oral contraception, and as was shown by the belief that masturbation caused insanity. The dangers of addiction and HIV infection are both so great that we should, as a profession, try to get the right response and carry society with us.

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### Children surviving parental murder

SIR: We agree with Black & Kaplan (*Journal*, November 1988, **153**, 624–631) that children surviving after the father has killed the mother should not automatically be placed with relatives, and that a child psychiatric team has an important role in the intervention following such tragedies. We have been involved in two cases recently which highlight Black & Kaplan's recommendations.

*Case Report (i):* A 12-year-old girl presented with multiple tics and vocal utterances a few months after starting secondary school. Her father had killed her mother when she was an infant, and she had been placed with her maternal grandparents, whom she had come to know as "Mummy and Daddy". They had taken her regularly, through her primary school years, to the grave of "Mummy Gloria", but had never told her who this was or what had happened. They completely refused to talk about her father, and her paternal grandparents had been totally excluded from contact with her before she had reached the age of 2. They refused to allow the girl to be seen by her father in prison. When the girl was 8 years old they were seen by a child psychiatrist, at the request of social services, regarding the advisability of access to her father. They refused to talk to the girl about her father, wanting to put off such discussion till she was older. In the face of the opposition to him, the father eventually gave up trying to make contact with the girl. In her first few months at secondary school she mixed with peers from the wider community, some of whom had passed remarks to her about her father having killed her mother. Shortly after this, her symptoms led to her referral to us. Despite various treatment approaches, her symptoms have run a fluctuating course, and her grandparents have persistently avoided all attempts to talk openly, either individually or in family sessions, about the circumstances of her mother's death. The girl's education has been considerably disrupted due to handicapping symptoms.

*Case Report (ii):* Three children, aged 4, 7, and 9, were referred to us by a social worker, along with three sets of maternal aunts and uncles with whom they had been placed following the killing of their mother by their acutely psychotic father. The social worker wanted counselling for the children and for the aunts and uncles, who already were non-verbally giving the message to the children that talk of the father was taboo. Joint interviews were held on a number of occasions with all three sets of relatives to discuss their loss of their sister, their feelings towards her husband, who was in a special hospital, and how the children's needs to grieve their mother and retain a positive perception of their father could be best met. There were also persisting fears regarding the short lived nature of the father's psychiatric illness and the possibility that his children might one day pose a similar threat to their own children. The children were seen individually and as a group. As their respective foster families all lived within a short distance of each other, and as they still attended the same school, their sense of identity as siblings was being maintained. Each was also a member of another family. They knew what father had done and had found a way of coping with it – he had "gone out into the cold without his cap on and had got a cold in his head". He was thus ill when he had killed their mother. All three families were helped to mark the anniversary of the tragedy by a visit to mother's grave for a shared placing of flowers.

In case (i) the psychological stresses of being placed with maternal grandparents who failed to resolve their grief and anger have probably contributed heavily to the development of a Gilles de la Tourette syndrome. In case (ii), intervention at an early stage after placement with maternal relatives will hopefully facilitate a better outcome.

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### Capgras' syndrome and town duplication

SIR: Anderson (*Journal*, November 1988, **153**, 694–699) concludes that the Capgras phenomenon is not specific for people, but includes a range of objects of importance in the patient's life. Traditionally, the Capgras phenomenon was said to be a delusional misinterpretation of people enjoying a close personal relationship, most often the spouse, and this could be explained in psychodynamic terms by ambivalence on the part of the patient towards the person who has been duplicated. We describe a case in which the affective bond to the inanimate object is totally absent.

*Case Report:* Mr E. was a 32-year-old fireman, who presented to the casualty department complaining that the town in which he lived had been duplicated "somewhere in Asia". He had no previous psychiatric history. On the night in question, he presented unkempt and unshaven, in a high state of arousal. His speech was pressured and he described his thoughts as "crashing over each other". He said he had taken amphetamines. He claimed that the whole of the town in which he lived had been duplicated in Asia by his drug dealers because he would not co-operate with them. He knew the town was not the real one, because not only did it not seem "quite right", but because many of the cars only had one person in them, which confirmed his suspicions. He was amazed that they should go to all this trouble for him, and believed they must have drugged him to take him there, as he had no memory of the journey. Interestingly, neither his wife nor family had been duplicated, despite being implicated in the plot.

He had neither visual nor auditory hallucinations. Despite his inability to concentrate, he was orientated in time, place, and person. Physical examination found him sweating, with a tachycardia. His pupils were dilated, but there were no focal signs. He was admitted to the ward and given chlorpromazine, but absconded early the following morning.

At follow-up, he remembered his experiences and ascribed them to a particularly 'bad' batch of amphetamines which he had recently purchased.

The specificity of Capgras' syndrome for people was soon found to be illusory (Coleman, 1933), when the phenomenon was described in relation to inanimate objects (in Coleman's case, letters). The psychodynamic argument was thus widened to suggest that ambivalence could also be expressed towards such objects that were affectively important to the patient. It is hard to see how the duplication of a large tract of south-east London could be explained along such psychodynamic lines.

Amphetamines are known to cause alterations in brain biochemistry and to produce states 'indistinguishable from schizophrenia or mania (Connell, 1958), despite which the Capgras phenomenon does not appear to have been previously described in such a situation. This case appears in the setting of amphetamine intoxication and, hence, has an underlying organic basis which further disproves a psychodynamic interpretation.

The only two previous reports of duplication of cities (Thompson *et al*, 1980; Kiriakos *et al*, 1980) have, unfortunately, made little attempt to interpret the findings in either a psychodynamic or organic fashion.

We would like to thank Dr R. Proud for allowing us to report on her patient.

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## A HUNDRED YEARS AGO

### Insomnia

In spite of all the criticisms to which the modern art of medicine is so frequently subjected by our literary friends, few pictures indicate a fuller grasp of the requirements of medicinal treatment than that given by our greatest dramatist. The aim of modern therapeutics is directed more and more to the employment of measures by which a return to the normal state can be attained, when in presence of disease nothing better can be desired than the elimination of all those abnormal features by which the sick person differs from his original healthy condition. The revival at the Lyceum serves to recall that Macbeth's contemptuous "Throw physic to the dogs" really forms one long exposition of the limitations of the use of drugs and of the conviction of the efficacy of the natural methods of cure. The number of references made throughout the play to sleep and dreams is remarkable. In turn, the theme is taken up until sleep is eulogised as "balm of hurt minds, great Nature's second course, chief nourisher in life's feast", and from this point attention is concentrated upon the results of sleepiness, or of sleep perturbed by frightful visions, until it culminates with the sleep-walking scene of Lady Macbeth, and "the thick-coming fancies that keep her from her rest", and her probable suicide. No medical man can sit through this performance without wishing that he had been called during the early stages of the malady. On all hands the underlying cause is recognised, and the proper method of treatment is clearly indicated. Science was in its infancy, however, or we should have been deprived of the pleasure of this portrayal of an interesting medical and psychological study.

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*Researched by Henry Rollin, Emeritus Consultant Psychiatrist, Horton Hospital, Surrey*

*British Journal of Psychiatry* (1989), **154**, 891–893

# Books Reconsidered

## *A Study of Brief Psychotherapy*: D. H. Malan*

Paraphrasing Philip Larkin (1974), it might be said that British psychotherapy research 'began/In nineteen sixty three' – the year of publication of *A Study of Brief Psychotherapy* – 'Between the end of the *Chatterly* ban/And the Beatles' first LP'.

Stimulated by his "mentor, and opponent in many controversies", Michael Balint, David Malan set out in the 1950s to establish the importance, efficacy, and feasibility of brief psychoanalytical psychotherapy in the treatment of neuroses. The social context for this project was the incorporation of the Tavistock Clinic within the NHS, and the need to find forms of psychotherapy relevant to an egalitarian service, free at the point of delivery. The intellectual context required Malan to fight on two fronts. The first was the psychoanalytical establishment which, despite early enthusiasm among the pioneers, including Ferenczi (Balint's analyst), tended to see brief psychotherapies as unsuitable for any but the most mildly disturbed, incompatible with the fundamental psychoanalytical tools of transference and deep interpretation, and in general mere palliatives compared with the benefits offered by full, and necessarily prolonged, analyses. Malan's second battle was to establish scientific validity for psychotherapy in the face of opponents like Eysenck who, using superficial outcome measures and a certain amount of prestidigitation, questioned the entire basis of psychoanalysis, claiming that it produced results no better than those achieved by spontaneous remission. Unlike some of his psychoanalytical colleagues, Malan did not respond to this challenge by turning his back on science, but rather by looking for ways in which the deep changes sought by psychoanalysis could be quantified and studied.

Malan's methodology was that of 'action research', a mixture of clinical self-scrutiny and statistical rating that would, by today's standards, be criticised for its use of participant observation by the researcher, unwarranted inference from scanty data, and primitive rating methods. Nevertheless, as a pilot project it was a great advance on previous work, managing to be both clinically meaningful and to have some statistical validity.

The book is based on a study of 19 patients treated with brief psychotherapy – ranging from 4 to 40 sessions, with a median of 15. Outcome was rated on a four-point scale: 3 = substantial resolution of the main problem, 2 = limited resolution, 1 = symptomatic improvement or valuable false solution, 0 = no change; and was assessed 1–3 years after therapy was completed. Malan was extremely stringent in his outcome assessments, which were based on psychodynamic criteria. Balint (1959) had defined psychological health in terms of the resolution of the oedipus complex, reflected in the capacity to form loving heterosexual relationships based on genital satisfaction. This yardstick can be felt as a powerful influence on Malan, but he also emphasised the importance of 'translation of symbols', albeit in sexual terms. For instance, in order to score 3, a patient would have to have a good orgasmic heterosexual relationship, and also to have resolved and achieved insight into guilt about mistakes at work as representing "guilt in relation to male authority about homosexuality". The latter without the former would get a 2, since Malan regarded resolution of problems with the same sex as being prior to, and easier than, heterosexual resolutions. This attempt to find one fundamental outcome measure contrasts with contemporary approaches which tend to use a battery of tests, designed to pick up different aspects of social and psychological function. Malan's measure is relatively insensitive, and might also be criticised because of its strong implicit value-judgement about what constitutes psychological health. In our more pluralistic, post-sexualist era the pursuit of heterosexual genital satisfaction seems too narrow a goal. It would be impossible for a celibate to score 3 on Malan's criteria. However, most people would probably accept that the achievement of satisfying intimate relationships *is* of overwhelming importance as a mark and buttress of psychological health, and the value of Malan's classification is that it does not flinch from this.

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*London: Tavistock (1963).

Malan first established a method for scoring outcome. He then divided his sample into two roughly equal halves: ten who scored 0; nine who scored 1 or more (only five – about 25% – achieved 3). He was then in a position to consider his first question: in general, what are the selection criteria for brief therapy, and in particular, is it true that it is only the less disturbed, with illnesses of recent onset, who are likely to benefit? His answer to the latter is an unequivocal no: some of the most long-term and 'disturbed' patients had the best outcome, while several with only mild difficulties of recent onset did poorly. This important, and possibly counter-intuitive, result is particularly relevant in the face of current charges that psychotherapy is mainly of value to the 'worried well'. Malan appears to show that the 'walking wounded' can also benefit. His result has to be qualified by his failure to develop a consistent rating scale for severity, and by the 'ecology' (Malan's term) of patients referred to the Tavistock Clinic, none of whom were psychotic, and all of whom were in work (this was the 1950s) or running a home. Subsequent research on this point has on the whole confirmed Malan's results (Garfield, 1986): some evidence of previously successful adjustment ('ego strength') is correlated with good outcome in psychotherapy, but within that broad category quite disturbed patients can have good outcomes, a point established in a British context by Ryle and his collaborators (Brockman *et al*, 1987).

Malan's next question was a simple one, although the answer was not. If severity is not a good guide to selection, what is? Here he highlighted that most elusive of psychological entities, motivation. No formal attempt to rate motivation was made, but cases were divided into those with 'high' and 'low' motivation based on a variety of criteria, including whether the patient contacted the clinic after assessment asking for help, whether they altered or failed to turn up to appointments, and the therapists' assessment of their capacity for insight. On this basis he found that 85% of those with good outcomes had high motivation, and nearly half of those with low motivation scored 0 on outcome. The importance of motivation as a predictor of outcome has been confirmed by later studies (e.g. Keithly *et al*, 1980). As always, Malan was not satisfied by superficial correlations and tried to discover deeper meaning behind them. For him 'motivation' is an aspect of the therapeutic alliance that is a precondition of successful therapy. The best outcomes are likely where the patient is well-prepared for therapy, knows in advance what is entailed, feels it is likely to help, and is seen by the therapist to be open to the technique he has to offer. While resistance later in therapy may be a healthy antidote to idealisation, initial resistance, especially if manifest in lateness or missed appointments, is likely to predict therapeutic failure.

The third part of Malan's project shows him at his most ambitious and innovative. It is a process/outcome study looking at the relationship between therapeutic interventions and outcome, based on therapists' detailed case reports (rather than, as would now be required, recordings of sessions). As a psychoanalyst, he is particularly interested in the relationship between transference interpretations and outcome. From the case reports he derives a number of measures: (a) overall transference score, depending on whether transference was judged to be an important issue in therapy; (b) a 'transference ratio', the ratio between the number of transference interpretations and the total number of interventions of any kind made by the therapist; (c) the proportion of these interpretations linking the patient and therapist; (d) an assessment of whether 'negative transference', especially feelings of grief and anger about termination, were an important feature of the therapy. These four measures were then correlated with the overall outcome score, and also with a new measure, 'behaviour at follow-up', which is classified on a three-point scale as "optimum" (gratitude and co-operation with a follow-up study and occasional letters to the therapist), "overdependent" (requests for more treatment etc.), and "disturbed" (breaking off therapy, refusal of further contact).

The limitations of the method were considerable: small numbers, non-blind ratings, arbitrary rating scales, and therapist distortion. Nevertheless, the results were striking: high transference ratios were correlated with good outcome, albeit weakly ($P=0.15$), but patient/therapist transference interpretations were strongly correlated with good outcome ($P=0.03$), and patients in whom negative transference was explored had better outcomes and more optimal behaviour at follow-up than those in whom it was not. Subsequent, more methodologically rigorous, studies have confirmed these conclusions (Marziali, 1984).

This last section of the book is presented with a feeling of gathering excitement as the story unfolds, showing Malan's skills of clarification and timing at their best, leading to his triumphant vindication of the psychodynamic dogma that it is transference interpretations that are 'mutative' in psychoanalytical psychotherapy.

But Malan was a scientist as well as a psychoanalyst, and was not content to let matters rest there. Although the use of transference interpretations is correlated with good outcome in psychotherapy, this does not establish a necessary causal relationship. Malan acknowledged that client-centred and forms of therapy other than psychoanalytical may also achieve good results. He therefore suggested that what is needed for good outcome is "deep involvement" between therapist and patient, and that transference interpretations are likely both to heighten this deep involvement and to be a manifestation of it. For successful therapy there has to be an emotional and theoretical congruence between patient and therapist, and a high transference ratio is, in psychoanalytical psychotherapy, a good indicator of this.

Subsequent research has on the whole confirmed much of Malan's work. Orlinsky & Howard (1986) identified five process factors that are consistently found to correlate with good outcome: adequate preparation of the client so that they know what to expect in therapy; a strong therapeutic bond which may in part be manifest in the therapist's assessment of the patient as being well-motivated; the capacity and skill of the therapist, which, in analytical psychotherapy, could well be shown by a high transference ratio; the expression of affect in session; and the number of sessions, where it appears that the more the sessions the better the outcome. Only the latter is at variance with Malan's results, but since at the Tavistock 'brief' therapy may mean up to 40 sessions, it might be concluded that one man's brief therapy may be three times another man's maximum (Brockman *et al*, 1987).

What then, a quarter of a century later, is our evaluation of Malan's work? Perhaps the most outstanding feature is his style. There is a clarity and succinctness in his writing, an ability to crystallise concepts, to simplify without being simplistic, and to summarise complex clinical material in a vivid and jargon-free way, that sets him apart from almost every other psychoanalytical author since Freud. His second great strength is a benign skepticism which frees him from slavish adherence to any but the most fundamental of psychoanalytical tenets, and leads him to question the paraphernalia of psychoanalysis without discarding its essential truths and techniques. Fundamentalists may resist his revisionism, just as many true believers find the Bishop of Durham's quasi-agnosticism unacceptable. Other practitioners may resist even his clarity, which inevitably does some violence to the inherent opacity of the psyche, which Coltart (1986) calls 'the sheer unconsciousness of the unconscious'. Doing psychotherapy can never quite be like playing chess, and sometimes Malan makes it seem almost too simple. As a researcher and scientist Malan's work is unrivalled, especially in Britain, and much of what has followed has served merely to confirm his hypotheses. As a clinician one senses how deeply influenced and impressed Malan is by Balint, and how at times he uses science to resist this influence. In his next, and in my view, most original and successful book (Malan, 1973) this tension has gone and he finds his own unique voice, but in later years once again he fell under the spell of another powerful and charismatic figure, Habib Davanloo (1978). A final 25-year outcome for Malan's therapeutic work might therefore be somewhere just short of 3, but how many therapists would not be content to settle for that?

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# *Book Reviews*

Editor: Sidney Crown

**CAMDEX: The Cambridge Examination for Mental Disorders of the Elderly.** By M. Roth, F. A. Huppert, E. Tym and C. Q. Mountjoy. Cambridge: Cambridge University Press. 1988. 72 pp. £50.00.

The most quoted survey of psychiatric disorder in old people living in the general population remains even now Roth's study in Newcastle-upon-Tyne (Kay *et al*, 1964). The method they used was a simple clinical interview by practising psychiatrists, and the diagnosis of a 'case' was made on the basis of training and experience. Since that time the methods used in psychiatric epidemiology have become increasingly sophisticated. Interview schedules must now have each symptom well defined, and the criteria for a 'case' made explicit in one of a number of different ways. The Present State Examination (Wing *et al*, 1974) and the Psychiatric Status Schedule (Spitzer *et al*, 1970) have sired several for use with the elderly – the Geriatric Mental State Schedule (GMSS) (Copeland *et al*, 1976), Comprehensive Assessment and Referral Evaluation (CARE) schedule (Gurland *et al*, 1983), and the Brief Assessment Schedule (CARE's junior brother). These are excellent tools for use in the general population of elderly people where depression and the non-specific neurotic symptoms are far commoner than the dementias. However, they are designed to pick up basic memory deficits and broadly identify those with a whole range of organic cerebral disorders, but they do not attempt a more sophisticated diagnosis of the type of dementia. These schedules remain basically psychiatrists' 'tools' and have developed, regrettably, without much input from skilled neuropsychologists.

Now, a quarter of a century after the Newcastle survey, Roth and his colleagues in Cambridge have published their long-awaited CAMDEX, which claims not only to be a satisfactory tool for epidemiological purposes, but also to provide a tool for diagnosing four categories of dementia, two types of delirium, and a broad range of functional disorders.

The schedule itself has a number of advantages. It is easy to follow, and has the merit of simplicity. In striking contrast to the terror struck in a trainee's stomach on first encountering the PSE or the full CARE, new interviewers will take to this schedule with little anxiety. The neuropsychological section, developed by Huppert, covers a broad range of functions, including language, comprehension, praxis, abstract thinking, and visual recognition. This section is simple to administer and would be a handy ward tool used on its own in routine clinical practice.

But does this schedule do what it claims? Clinical diagnosis of the *type* of dementia is notoriously difficult. Vascular dementias have traditionally been diagnosed using Hachinski's score (Hachinski *et al*, 1975), a list of symptoms derived from Roth's own textbook clinical descriptions (Slater & Roth, 1969). There has been increasing criticism of these criteria; Liston & La Rue (1983) suggested that post-mortem pathology correlated poorly with clinical symptoms. CAMDEX operational diagnostic criteria use the same old textbook descriptions. Maybe Roth is right to stick with them, but only a large series of clinical/pathological correlative studies will prove the point. The CAMDEX now needs to be extensively tested both in the community and in institutional populations of elderly people who will eventually come to post-mortem. It seems to me likely to be weak in the area of delirium and in paranoid states, but this again needs further exploration.

Finally, the CAMDEX has been long in development – too long for it to be developed as a computerised schedule. What a pity it isn't all on lap-top microcomputer. Psychological tests in particular lend themselves easily to this style of examination, and with the promised computerised diagnosis now being developed for the CAMDEX, this would save researchers valuable time and money.

I gave my copy to my colleague, Alastair Macdonald, as a Christmas present. When I told him I was reviewing it for the journal he commented, "How can you review a schedule on its own? It's like being asked to assess the performance of a car without driver or petrol. What you can say about the CAMDEX is it's a gorgeous piece of machinery. *But* divorced from a research setting, unaccompanied by reliability and validation studies, it's a bit like a 'concept car'. What you can't say is how it handles in the Great Race of Scientific Advance."

Should *Journal* readers buy this handsome pack? Anyone interested in the psychiatric epidemiology of late life must have one. All psychiatrists in training and those working with elderly people will find it a useful clinical tool.

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**The Scope of Epidemiological Psychiatry.** Edited by P. WILLIAMS, G. WILKINSON and K. RAWNSLEY. London: Routledge. 1988. 536 pp. £33.00.

'In no branch of medicine is epidemiology needed more than in psychiatry', Michael Shepherd wrote in 1969. To honour his retirement, colleagues at the Institute of Psychiatry have organised a Festschrift which takes up this theme – the scope of epidemiological psychiatry.

The collection starts with allied disciplines – history, sociology, psychology, and economics. Contemporary statistical methods, briefly mentioned by Hand, perhaps receive too little attention given their ascendency in organic epidemiology. Cooper & Wing give succinct accounts of aetiological research for dementia and schizophrenia respectively. Epidemiology for health service evaluation is well represented in contributions by Falloon & Tansella, although the contributions on mental hospital studies in Britain, and mental health service statistics in the USA, are rather dated. (The latter chapter, and another on American mental health policy, would have been more relevant if they had been written about Britain.) One chapter, on social deprivation and child growth, seems to have got into the wrong book.

There are also some gaps. Evaluative studies of mental health services in primary care should have been looking at what community psychiatric nurses are doing, and at the movement for self-help in mental health care. There is no chapter on prevention – surely an important use of epidemiology. And what about the psychotherapies? Several contributors suggest that mental health care is pre-eminently a primary care task. Yet we know little about Balint's "the drug doctor" in regard to pharmaceutical use.

Within the contributions there is also a critical issue: has psychiatric epidemiology been co-opted by clinicians to support their belief that psychiatric diagnoses are as reliable as in organic medicine? Rose poses the argument squarely: "Clinical diagnosis splits the world into two: with regard to each disease there are those who have it and those who do not. . . . In population studies the situation is not like this, and rating scales for mental illness show continuous, unimodal distribution. . . . Population reality has been constrained to fit the clinical preconception." Rose draws an analogy with the days when hospital clinicians believed that blood pressure was bimodal, distinguishing clinical hypertensives from normotensives. Has the attention given by epidemiological psychiatry to case detection also been a Procrustean task?

Yet epidemiology has often failed to support psychiatric 'caseness', as several authors show. Wing describes a recent longitudinal study, "in which, of sixty-three index patients diagnosed as schizophrenic according to DSM–II, only eighteen were so diagnosed according to DSM–III". In the WHO international studies of schizophrenia, Jablensky says, "the clinical picture [of schizophrenia] was shown to be highly variable (no single symptom being invariably present in every patient and in every setting)". Sharp & Morrell, from the setting of general practice, argue that, "the classifications of psychiatric disorder in current use are quite inappropriate for primary care" where multiple problems require clinicians to make an intelligent blend of intervention and support. And the 'case' appears to have little prognostic use. Jablensky again: "Notably, neither the clinical ICD–9 subtypes of schizophrenia, nor the CATEGO classes, predicted course and outcome as effectively as the fairly general characteristics of person and process".

Epidemiology can question the certainties of clinical practice, and encourage scepticism – a quality that several writers attribute to Michael Shepherd. This book covers a broad field, is fluently written, and its quality of production is high. It deserves to be widely read.

MARK MCCARTHY, *Senior Lecturer in Community Medicine, University College, London*

**One Foot in Eden: A Sociological Study of the Range of Therapeutic Community Practice.** By MICHAEL BLOOR, NEIL MCKEGANEY and DICK FONKERT. London: Routledge. 253 pp. £12.95.

Therapeutic communities (TCs) are experiencing lean times within the health service. Enthusiasm seems hard to sustain, with some units closing and others running below capacity. To some extent this is a measure of their success in exporting their message. Most psychiatric units have assimilated the basic principles of encouraging patient participation and dispelling mystification. Commitment to ensuring the availability of living–learning situations for patients is often enshrined in the existence of certain group activities – e.g. the ward large group and the staff group. Growing emphasis on community care often means that the in-patient population is very disturbed and their admissions shorter than they used to be.

The therapeutic community movement has also been somewhat hampered by a poor fit between its practice and the medical terms used to describe it. Debate about individual communities and their styles have often been couched in terms of the balance between 'treatment' (often implying the acceptance of regression) and 'rehabilitation' (emphasising adult functioning) or between 'psychotherapy' and 'sociotherapy'. Those of us working in the field have regularly found these models to be limited and often paradoxical in their implications.

This book helps greatly by focusing on 'redefinition' as the central component of therapeutic community functioning. It attests that the redefining of the meaning of activities is not just an initial acclimatisation for the patient but that 'the act of redefinition is thus the motor of therapy'. The differing styles of various TCs are then employed, comparing the emphasis given to the two main tools of this redefinition which the authors describe. The first style is 'instrumentalism', described as organising the resident's activities to shape his behaviour in a healthy direction. The other is 'reality confrontation', which is here helpfully defined in a manner to encompass confrontation with both outer reality and inner reality. This method of examining TC functioning is certainly a more useful and flexible dichotomy than those I have used before.

To examine these principles the authors describe and analyse functioning in eight different communities with widely varying residents and aims. Sociologically this is undoubtedly a major strength for the book, but it makes for hard going for the clinically concerned reader. Keeping in mind the differing needs, for example, of a Rudolph Steiner school, a day hospital, a couple of in-patient psychiatric units, and two differing adolescent units is an unwieldy burden which forces the reader to keep referring back. It might lead to many simply giving up and just reading the conclusions.

On the whole, this book brings a welcome intellectual clarity to an area which has previously suffered from some dissonance between practice and theory. It is to be highly recommended to those working in the field and interested in TCs, but is probably too detailed to engage the casual reader.

Tom Burns, *Consultant Psychiatrist,*
*St George's Hospital, London*

**Cerebral Hemisphere Function in Depression.** Edited by Marcel Kinsbourne. Washington, DC: American Psychiatric Press (UK distributors: Cambridge University Press). 1988. 190 pp. (hb). £18·50.

According to Kleinian psychoanalysis, the infant progresses from the schizoid to the more mature depressive position. So, too, the infant biological psychiatry. The sort of neuropsychological and neurophysiological research summarised by experts in the field and collected by the American Psychiatric Association in this volume would almost certainly have been about schizophrenia a decade ago. There has been a most fruitful rapprochement between the top-down approach of cognitive psychology and bottom-up approach of neurobiology whose upward leanings have lead to the belated discovery that the brain does not stop at the hypothalamus.

Although the seeds of much current thinking in this area were sown by Jackson, Babinski, and Goldstein, the work is still speculative and has no clear focus. Where to begin? Lesions of the right hemisphere can interrupt the recognition and expression of affect whether embedded in a facial expression or tone of voice, so perhaps that is a starting point. But depressed mood seems to follow left hemisphere lesions more than right. Is it a question of the damaged hemisphere acting abnormally or releasing the normal activity of its opposite number? Is the right hemisphere sad and the left happy? Perhaps it is the imbalance between the two which is pathogenic? However, many of the authors warn against 'cortical chauvinism', proposing that the right/left dichotomy is misleading and we should consider anterior/posterior and cortical/subcortical relationships as well.

The front/back axis is favoured by Davidson, armed with EEG findings from sources as diverse as crying infants and gloomy undergraduates. Robinson's group from Johns Hopkins University have examined all three axes, summarising their data on post-stroke depression. They have found that left hemisphere damage is more likely to produce depression if it is anterior, although the opposite relationship appears to hold for lesions on the right. Animal work suggests that cortical destruction may exert its effects through disruption of noradrenergic projections from the basal ganglia, although frustratingly only on the right. As Galin points out, it is premature to conclude too much about affective disorders from induced hyperactivity in rats. Tucker & Wexler each offer wide-ranging speculations incorporating ideas from many sources, and come up with complex models of brain and behaviour which avoid the frequently applicable criticism of 'narrow localisationism'. It is fitting that the most influential thread running through this book is the work of the editor. The authors are not content with notions of affect centres and simple depressogenic lesions. Instead, there is an appreciation of functional abnormalities in the restricted sense of the term such as inappropriate activation at a psychophysiological level, which may be superimposed on structural defects which then result in the variety of cognitive and behavioural manifestations psychiatrists call depression. This is a rich approach which can only be described as Kinsbournian.

Anthony David, *Research Worker,*
*Institute of Psychiatry, London*

**Computing for Clinicians.** By TIM CHARD. London: Elmore-Chard. 1987. 144 pp. £18.00.

The author of this volume had a difficult objective: he sought to brief those colleagues who enjoy a computer-free existence on both the basic principles of computer systems and various clinical applications. These include the role of computer systems in data capture and analysis, computerisation of medical records, clinical diagnosis by machine, and a discussion of the benefits of computer-assisted instruction in medical schools. Most practitioners would probably feel that at least one of these topics would be of interest, and much of the book is both wise and sound. For example, the section describing the installation of computer systems stresses a number of pitfalls for the unwary, and the author throughout stresses the practical limitations of computer systems as well as their possible benefits.

That said, this is not the easiest book for the layman to read, as it is peppered with non-essential jargon which may frighten off potential readers. For example, the technical chapter includes detail (such as a discussion of collision-detection in networked machines) which should never be needed by *any* end-user. There are also areas in which the author's views are somewhat unusual – for example, in classifying algorithmic procedures for data analysis as types of expert systems, and in some technical definitions.

Although this book makes few specific references to psychiatry, anyone wanting a critical review of the rapidly changing field of medical computing as it appeared *circa* 1987 would probably find it to be a useful introduction. However, they would be well advised to ignore its more technical aspects.

COLIN COOPER, *Lecturer, Department of Psychology, University of Ulster, Coleraine*

**The Transition to Parenthood: Current Theory and Research.** Edited by GERALD Y. MICHAELS and WENDY A. GOLDBERG. Cambridge: Cambridge University Press. 1988. 381 pp. £27.50.

The transition to parenthood has been subject to increasing study since the 1950s, when debate first polarised around the question of whether this period takes the form of a serious crisis or only a briefly stressful phase. However this question is answered, the transition to parenthood, stretching from the beginning of pregnancy to the first months of infancy, must rate among the most significant events in adult life. Its academic study, which this book charts, is peculiar in involving co-operation and debate between a wide variety of disciplines.

The aim of the book is to outline the current status of the subject, and contributors duly set out to review the literature, report on their own research, and present the latest theoretical models. Specific chapters examine the individual's motivation to parent, the effects of parenthood on psychological development and self-perception, changes in couple relationships due to parenthood, and the effects of social, familial, and individual intervention and support programmes.

The book is in three sections. An initial section on adaptation to parenthood under typical conditions leads into a second section on adaptation in conditions of risk. Individual chapters explore medical risks such as maternal age and premature birth, and psychosocial risks such as adolescent parenthood, comparing adaptive and maladaptive responses together with typical vulnerabilities and risk profiles for these groups. A final section examines ways in which parents might be assisted through this period of change, ranging from social support networks to more formalised intervention programmes before and after conception and birth, for a wide range of individual and family situations. Research findings on the effectiveness of these interventions are reviewed. Throughout the book individual contributors attempt to synthesise conceptual and research findings, point to methodological shortcomings of previous work, and suggest areas in which further research is needed.

This book will be an invaluable source for all those wanting an overview of the current state of work in this field. It is an academic and research-orientated text, setting out to provide an intensive and critical review of previous work. Clinicians will also find this book of relevance to their work, particularly since clinical practitioners have tended to neglect this period in the life of parents. The section on intervention strategies will give much food for thought, especially for those working with infants and new or expectant mothers.

TERRY BIRCHMORE, *Principal Clinical Psychologist, Dryburn Hospital, Durham*

**Paradigms of Clinical Social Work.** Edited by RACHELLE DORFMAN. New York: Brunner Mazel. 1988. 432 pp. $61.50.

In 1970 there appeared in the social work literature a useful book entitled *Theories of Social Casework* (eds R. W. Roberts & R. M. Nee, Chicago University Press) – a book that still has current value for its content, style and concise approach. The volume under review is an earnest but somewhat pretentious (and certainly over-long) attempt to update this kind of approach to modern clinical social work practice. The latter is defined as social work with individuals, families, and groups as distinct from the broader field of social work at a community level of intervention. The contributions in the book revolve around a case involving a family and chosen by the editor. The contributors were asked to set out how their particular theoretical approach could be applied to the case, how it would work in practice, and what its limitations would be. Such an approach has considerable potential. However, the case was described far too vaguely and there are too many approaches described in the book. This has led, perforce, to a great deal of padding and overlapping. Indeed, more than one contributor seems to need to apologise for the difficulties involved in applying their particular approach to the case. Some 14 approaches are described (e.g. psychodynamic, Adlerian, psychosocial, radical behaviourist, cognitive, and family therapy). In the third part of the book ('on meta-paradigms') the material really seems to take off into the realms of the more fanciful; the approaches described here include 'eco-systems', 'existential', and 'cybernetic epistemology'! The pretentious quality of some of the writing is exemplified by the following: "In this exposition of the constructivist-developmental paradigm, individuals have been presented as active agents who create meaning as they progress in their understanding of the physical, social and moral aspects of the world" (p. 351). Teachers of social work and counselling skills may find this work moderately useful for dipping into, but I cannot see busy psychiatric professionals on this side of the Atlantic finding much to help them in the stresses of their day-to-day practice. Those desiring a concise and relevant account of the essentials of the relationship between social work theory and practice, and more especially as this applies to the UK, would do better to consult *Theories of Practice in Social Work* (eds P. Hardiker & M. Barker, 1981, London, Academic Press).

HERSCHEL PRINS, *Retired University Teacher of Social Work, Leicester*

**Electroconvulsive Therapy.** By RICHARD ABRAMS. Oxford: Oxford University Press. 1988. 231 pp. £25.00.

During the past decade there have been at least five books and one journal in the English language concerned solely with the topic of electroconvulsive therapy. This is surely a witness to the value of the treatment. In 1979 there appeared Max Fink's *Convulsive Therapy: Theory and Practice*, and Fink is now editor of the journal *Convulsive Therapy*. In 1981 papers read at a conference in Leicester University were edited by Palmer under the title *Electroconvulsive Therapy: An Appraisal*, and in 1982 Abrams, with Essman, edited another series of studies: *Electroconvulsive Therapy: Biological Foundations and Clinical Applications*. Also in that year, another single-author book appeared: *ECT – A Clinical Guide* by Morris Fraser, a clear instructional manual which followed the Pippard & Ellam report into practice in Great Britain. Now Abrams, a leading American author and researcher, has produced the present single-author text, which predates the guide to clinical practice in Britain, *The Practical Administration of ECT*, just published by the Royal College of Psychiatrists.

Abrams presents a useful summary of the literature and research on the topic. A criterion for judging topicality is the proportion of references of recent origin, and the work passes this test superbly: of the 786 references, 24% refer to work published in the past five years.

So, what is new in theory and practice of the therapy? The answer is that there have been no radical changes in the past decade apart from a confirmation of the effectiveness of the treatment. On this point the author is unsure of his ground, referring to a recent spate of studies of effectiveness as impeccable in their methodology yet arriving at different conclusions. Having difficulty in defending the efficacy of the treatment in face of this disparity, he resorts to the argument that scientific researchers pick and choose data to suit their personal bias, a statement which is probably partly true but nonetheless astonishing for its abrupt utterance. He would have done better to underline the many confounding variables in outcome research and then rely on the meta-analysis of Janicak which pointed to the overwhelming evidence for effectiveness; for some reason he quotes that author only in the context of the laterality controversy.

On the topic of placement, Abrams comments that the introduction of unilateral ECT is the greatest technical advance since the introduction of the treatment; however, the greatest technical advance will probably prove to be the introduction of pulse wave delivery, reducing unwanted dysmnesia and so rendering the uncertain procedure of unilateral placement unnecessary.

The use of double ECT – two treatments in one session – is said to be a not unusual procedure in severely disturbed states; if so, and if it produces rapid relief of severe disturbance, then it is worth more attention than the one reference supplied.

Premedication with atropine is still advocated, although this is an unpleasant and unnecessary procedure. The author points out that ECT should be given more frequently on an out-patient basis, but states that this is seldom done in the United States; perhaps the College's guide on British practice, with its recommendation of an information leaflet, will modify that omission of a useful procedure in the United States also.

This book is recommended to those who wish for a convenient collection of the recent studies on the topic. It is not a useful guide for clinicians, at any rate on this side of the Atlantic.

R. P. SNAITH, *Senior Lecturer in Psychiatry, St James's University Hospital, Leeds*

**Jungian Child Psychotherapy.** Edited by MARA SIDOLI & MIRANDA DAVIES. London: H. Karnac (Books) Ltd. 1988. 286 pp. £14.95.

The aims of the editors of this collection of papers were twofold: to pay tribute to Michael Fordham's creative and pioneering work in theory and practice of Jungian child psychotherapy, and to introduce the reader to Jungian child psychotherapy, a relatively recent development in analytical psychology. Originally it was thought that child neurosis was a consequence of parental psychopathology. Fordham expanded Jung's ideas about archetypes, the self, and individuation to apply to the child, particularly the archetypes of the collective unconscious. The authors practise in several different countries and, with the exception of the article on 'Sand play therapy with a psychotic child', they quote extensively from both Jung and Fordham. In addition to other shared references they list a wide selection of Jungian writers and writers from other disciplines, such as Bion, Meltzer, Klein, Winnicott, Bick, and D. H. Lawrence.

Fordham makes a substantial contribution at the beginning of the book in discussing the difference between the Jungian and Freudian approach to child psychotherapy. He emphasises the importance of acknowledging the real child in the real world as well as the symbolic internal child. The papers are arranged in a general developmental pattern. For example, an article early in the book uses infant observation as the basis to expand the concept of primal self and defences of the self, which are both purposeful for survival, but may be at great cost to emotional and psychological growth. Later in the book are articles about the treatment of a child approaching puberty and the treatment of an adolescent. Where similar concepts are used differently they enhance the sense of each therapist being an individual and using this uniqueness to relate empathically to each child. I felt that where the same concepts were stated in several articles the repetition helped to clarify the concepts.

Among the collection of themes discussed were playing and the growth of imagination, primal scene anxieties, individuation in the first half of life, acting out, acting in, and the resultant management problems.

Although the writers have a great deal of experience between them the book conveys a sense of an ongoing and dynamic learning process. This book is of a high standard, and is particularly valuable for those working with children in a wide range of settings.

ELIZABETH GEE, *Analytical Psychologist*

**Etiology of Dementia of Alzheimer's Type.** Edited by A. S. HENDERSON and J. H. HENDERSON. Chichester: John Wiley & Sons. 1988. 251 pp. £32.95.

Over recent years, dementia of Alzheimer's type (DAT) has unquestionably become 'sexy'. A combination of epidemiological constraints (the 'greying' of the Western World), chemical discoveries (cholinergic deficits), and other less easily definable factors have forced the scientific and lay community to sit up and beg.

Dahlem Conferences in general gather scientists of different disciplines together, and set them to review the state of research and to write group reports with a view to improving international co-operation and signposting future enquiries. This Dahlem Conference in particular was a response to the growing interest in DAT.

Each group report is proceeded by reviews which form its heuristic data base. The reports themselves are concerned with risk factors, symptomatology, cellular pathobiology, and the relationship of DAT to normal ageing. It is difficult to avoid the conclusion that the cellular level is the important one. The key questions are such as, why is amyloid deposited in plaque cores? What are the genetic or environmental determinants of plaque and tangle formations? Readers interested in the progress of basic research will find this book an excellent and handy review. Individual papers are concise, and well presented and edited, and lists of sources are comprehensive. A real sense of excitement is generated by scientists of different disciplines trying to indicate an answer to the riddle within a particular area of research, but the need to co-operate never cedes to interdisciplinary rivalry. The group reports do seem to highlight the key questions, even if no satisfactory answers are yet available. The approach to future research is properly dialectic: e.g. amyloid deposition disrupts synaptic structure, versus neuritic degeneration causes reactive amyloid deposition. Readers must await the synthesis, but this book will help them to know how things are going. Some may even find it useful in deciding whether to dispose of all the aluminium saucepans!

ROBIN JACOBY, *Consultant Psychiatrist, Bethlem Royal and Maudsley Hospital, London*

**Community Care in Practice – Services for the Continuing Care Client.** Edited by ANTHONY LAVENDER and FRANK HOLLOWAY. Chichester: John Wiley. 308 pp. £11.95.

Community care is a difficult and contentious issue, and its quality is highly variable up and down the country. There are differing views of both its theory and its practice. This book contains excellent chapters which address these issues. Unfortunately it is not, in the main, an honest account of present community care – it is more of an ideological tract. There is, throughout, the implicit assumption that community care is a Good Thing and mental hospitals a Bad Thing. This is finally explicitly stated in the last paragraph: "The contributors to this book ... are united in the belief that better services can be provided. The inevitable decline of an outmoded system of care offers an opportunity that must not be lost".

The book comprises sections on planning community services, the components of community care, and the evaluation of community care in action. Despite the recurrent polemics there are some excellent chapters, such as Mahoney's factual and well-referenced account of the problems community care has with regard to finance and government policy. In the section 'Components of community care' there are excellent chapters on housing by Philippa Garety, day care and community support by Frank Holloway, 'Work and the continuing care client' by Stephen Pilling, and the best review of the role of relatives in the world literature,which was the contribution of Brigid MacCarthy. In the section on 'The evalution of community care in action' there is an insightful account of the move of a ward from a large mental hospital to a house in an ordinary street some ten miles away. The author (Paul Clifford) is perceptive and compassionate in his description of this painful process.

In summary, there are some exceptional nuggets buried in this book which are well worth digging for – in particular, the chapters by MacCarthy, Holloway, and Clifford. My main complaint, however, remains; there is too much ideological drum-beating and too little about community care in practice.

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**Learning Disorders: An Integration of Neuropsychological and Psychoanalytic Considerations.** By ARDEN ROTHSTEIN, LAWRENCE BENJAMIN, MELVIN CROSBY and KATIE EISENSTADT. Madison: International Universities Press. 1988. 381 pp. $45.00.

According to the jacket, the authors of this book are clinical psychologists in New York, and they tell us that they "have taught for years in psychoanalytically oriented departments of child psychiatry within medical schools". "This book", they also tell us, "is primarily addressed to the clinician who is conversant with psychoanalytic concepts and principles". They are concerned to address these psychoanalytically-oriented clinicians because many of them exhibit "a subtle preference for either a psychodynamic or neuropsychological explanation of (the) etiology" of learning disorders; and, the authors believe, the "time seems ripe to abandon such conflict for the sake of the . . . clinical realities" which the patient presents. It is necessary to do this, because the psychiatrists who dominate the scene, being psychoanalytically oriented, have, with rare exceptions, attributed learning disorders to psychodynamic factors, and have dismissed or ignored contributions from other perspectives, such as that of neuropsychology. The main object of the authors is quite straightforward: it is to persuade psychoanalytically-oriented psychiatrists, psychiatric trainees, and related workers in the United States to give due weight to the sorts of considerations which clinical psychologists draw to our attention, and, in general, to adopt "an integrative perspective" to learning disorders.

They set about their purpose in the following way. They classify learning disorders into four broad categories, while "focusing equally upon the in-between points" – disorders in which the aetiology is (a) primarily psychogenic; (b) primarily neuropsychological; (c) an admixture of the two; and (d) attributable to intellectual limitations. They describe and recommend the use of a number of psychological tests for diagnostic purposes – tests which are well-known to clinical psychologists (e.g. the Wechsler scale, Raven's Matrices, and the Rorschach test). They exhibit what they call their multiple perspectives and their testing programmes in a number of illustrative cases, thereby showing how they distinguish cases which are primarily psychogenic from those with neuropsychological components. They then go on to sketch their remedial principles and procedures – procedures which are practically-oriented for cases of the neuropsychological sort. They describe several such cases to illustrate what they have in mind.

This book is a competent and professional piece of work. However, it is distressing that the authors should have considered it necessary to write it. I am dismayed that they have found their colleagues in psychoanalytically-oriented departments of child psychiatry to be so ignorant, and so shut in behind the imprisoning walls of their psychoanalytic ideologies that they have found it necessary to try to knock holes in these prison walls, thereby letting in some fresh air from the fields of objective psychology and psychoneurology. I wish the authors well in their efforts to educate and free their colleagues.

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*University of Oxford*

**Student Psychiatry Today: A Comprehensive Textbook.** By R. I. COHEN and J. J. HART. Oxford: Heinemann Medical Books. 1988. 478 pp. £17.50.

I would not agree with the authors that this is an *entirely* comprehensive textbook, but it certainly comes close. It has a considerable advantage over many of its competitors in this field in that it is attractive, readable, up to date, and well referenced. There are 24 chapters covering most aspects of the subject, and I was particularly pleased to see reference to community and general practice psychiatry, which are not covered in many older books. Relevant clinical examples are included wherever possible, with clear advice on management, and there is an extensive glossary which is useful if you are struggling to come to terms with an entirely new clinical language.

My major criticism is that the book is primarily a theoretical text and is not particularly orientated towards highlighting the *skills* that medical students will need to master during their psychiatry attachment.

Basic interviewing skills are not adequately covered, and there is no clear guidance on, for example, how to take a drinking history, how to plan what investigations you might wish to carry out, or even on how to draw up a psychiatric formulation. It is also rather weak in the areas of psychiatry appropriate to general medicine, and would have benefited from a chapter on dealing with psychiatric emergencies.

Nevertheless, despite these omissions, it is an excellent resource text and is likely to appeal to the student with a keen interest in psychiatry who wants to read and know more about the subject. As such, it will complement other student textbooks that reflect the relevance of psychiatry to other branches of medicine. It would serve the newcomer to the specialty well into the first few months of his or her Senior House Officer training.

LINDA GASK, *Lecturer in Psychiatry, University Hospital of South Manchester*

**HLA in Narcolepsy.** Edited by Y. HONDA and T. JUJI. Berlin: Springer-Verlag. 1988. 298 pp. DM156.

The title of this book at first sight appears daunting, combined with the fact that the authors are unfamiliar and the book is yet another conference compilation. However, delving deeper we find that just over 100 years ago Jean Gelineau published the first paper proposing the term narcolepsy, clearly differentiating it from epilepsy and linking the intractable daytime sleepiness with cataplexy. There is a valuable chapter on the Japanese experience of the disorder, picturesquely called the 'napping disease'. The vivid sleep hypnogogic hallucinations, sleep paralysis, and poor nocturnal sleep are emphasised, as well as the distinction between narcolepsy and other types of daytime somnolence – attempts to combat napping being crucial in the former. General management and the worldwide founding of a network of 'narcoleptic societies' organised by patients is mentioned.

The book provides an overview of the human leucocyte antigen (HLA) system. The narcoleptic HLA disturbance DR2 and DQw1 positive was discovered in Japan and has been confirmed worldwide. There is a near 100% association reported, which is not found in other forms of daytime sleepiness. Indeed, it is the strongest association for any HLA-related disease. This is therefore a disorder of special importance for the rapidly advancing molecular biology field which is currently adding immensely to the understanding of disease genetics. Its complexity is apparent from the fact that the HLA system is concentrated only on the short arm of chromosome 6, and the proteins encoded by use of these genes. The disappointment is the failure to demonstrate immunological disorder in narcoleptic patients. The most acceptable hypothesis is that the HLA gene itself, or one nearby, encodes an essential protein for normal sleep.

Clearly this admirable book is specialised, but of value to those with interests in sleep disorders. It shows clearly that a new laboratory technique must be accompanied by a careful re-examination of diagnostic criteria for the disorder under study.

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**New Developments in Clinical Psychology Vol. 2.** Edited by FRASER N. WATTS. Chichester: Wiley and BPS Books. 284 pp. £29.50.

The second volume in this series lives up to standards set in the first. Watts is to be congratulated on bringing together another useful, varied, and well-presented collection of chapters.

The 16 chapters provide the reader with a well-compiled selection of current topical issues in the field, mostly orientated towards therapy issues. Clarke & Greenberg open the volume with an interesting review of research on the two chairs method derived from Gestalt therapy. This is followed by the usual scholarly review from Brewin on attribution theory and therapy and a chapter by Marx on problem-solving therapy. Watts' own chapter covers some of the problems and developments in behaviour-based therapies for agoraphobia, and offers a short but useful review of the evidence for and against the role of the spouse. The emphasis on safety issues is also appreciated.

Parry gives an up-to-date account of social support. I especially liked her effort to highlight the fact that the current emphasis on autonomy and individuality as a therapeutic goal may be out of step with what we know about mammalian evolution. Hanley provides a discussion of treatments for emotional disorders in the elderly. With the growing shift in population demography this area is likely to become more urgent. The role of social factors as preventive variables requires further consideration. MacCarthy provides us with a view of the often neglected area of ethnic minorities. She highlights the point that some of the assumptions of our cognitive-based therapies may be culture-specific. As in Parry's chapter, there is a challenge to the assumption that self-determination and autonomy are always the pillars of good mental health. This may only be true in some cultures.

Dunn Smith explores the topical area of child sexual abuse, highlighting the fact that there is much we still do not know. Aldridge alerts us to the importance of applying psychological knowledge to prevent difficulties in children. Richer's chapter on the role of nutrition on mood and behaviour acknowledges the generally poor methodologies in this area, but offers a reasonable plea not to throw the baby out with the bathwater. Tyerman & Humphrey offer a very good review on the findings relating to the consequences of head injury and rehabilitation. They point out that there has been neglect of work on the personal and emotional consequences. Their chapter suffers slightly from a failure to tabulate the mass of statistics presented, leading one to get bogged down at times in figures. A chapter on forensic psychology by Sharrock examines eye witness testimony.

The book closes with three chapters on the theme of service evaluation. Clifford & Damon explore some of the assumptions around the rush into the community, and highlight helpful cautions to those not ideologically committed. Mangen discusses the difficult area of cost-effectiveness assessment, giving some good practical advice. Finally, Brown explores the issue of consultancy in non-National Health Service settings.

As in all multi-author books some chapters are stronger than others, and I cannot claim to be competent in all the areas covered here. Nevertheless, the chapters read well, and are relatively short and concise with good and up-to-date bibliographies. I have no doubt that this will be a useful reference book for all those working in the field of mental health and disorder, and I recommend it highly.

PAUL GILBERT, *(Head of Speciality), Pastures Hospital, Derby*

**Babies and Their Mothers.** By D. W. WINNICOTT. London: Free Association Books. 1988. 125 pp. £6.95.

This is a collection of talks by Winnicott to a variety of professional workers, including doctors and midwives, who might be in the position of advising mothers. Here his genius is readily apparent in his capacity to convey profound and subtle insights about infancy in easily grasped and totally non-technical language. Much of Winnicott's insights stem from his understanding that "in the special context of early relationships, the behaviour of the environment is as much a part of the baby as is the behaviour of the baby's inherited drives towards integration and towards autonomy and object relating". This quote illustrates the close similarity with the more recent theorising of the American analyst, Heinz Kohut, but when Winnicott was first developing his ideas in the 1950s, this recognition of the crucial role of the environment in supporting or failing the child's development was by no means commonplace within psychoanalysis. Winnicott saw that the baby is absolutely dependent on the responses of the mothering person, and her capacity to 'hold' the baby reliably, first literally and then more metaphorically. Without reliable holding, the baby experiences the "unthinkable anxieties" of going to pieces or falling forever. Winnicott describes how the mother ordinarily prepares herself emotionally for the task of holding her baby by entering into a special state of mind he terms primary maternal preoccupation.

The first chapter concerns the "ordinary devoted mother". Winnicott describes how this famous phrase was actually the invention of a BBC producer who was looking for a slogan to illustrate the talk. Perhaps more than any other psychoanalyst, Winnicott was able to describe normal development and to appreciate the complexities of the skills which mothers intuitively bring to their task. In a talk on "Communication between infant and mother", he argued that his concern in studying infants and mothers was not in order to be able to prescribe good mothering, suggesting that at best, "We can avoid interfering". Instead, he found that through learning from mothers and babies, "We learn about the needs of psychotic patients or patients in psychotic phases". Throughout these talks he repeatedly emphasised the dangers of intruding on a mother's or baby's natural responses and instincts. This parallels a similar theme in his writings on the psychoanalytic process where he shows a great respect for a person's spontaneous developmental strivings and the importance of the analyst's non-interference. He comments here, "All we do in a successful psychoanalysis is to unhitch developmental holdups and to release developmental processes."

This is an excellent introduction to Winnicott, especially for anyone who works with children. Here he is highly accessible, provocative and thoroughly English – a delight!

PHIL MOLLON, *District Psychologist and Adult Psychotherapist*

**Mother, Madonna, Whore, The Idealisation and Denigration of Motherhood.** By ESTELA V. WELLDON. London: Free Association Books. 1988. 179 pp. £11.95 (pb), £30.00 (hb).

This book on female perversion draws on the author's experience of more than twenty years of psychoanalytic work with individual and group patients, mainly seen at the Portman Clinic. In the first part she explores the reasons why society has hitherto failed to recognise female perversion. She argues that a man's sexuality is rooted in his penis, and is aimed externally at a part-object. A woman, on the other hand, feels and expresses her sexuality with her whole body, and in her procreative drive. When expressing hostility by perversion she may, therefore, damage her own body – or the extension of her own body, her baby's body. Motherhood gives her enormous power and control to do this. Welldon thus sees women as capable of perversion in two main ways: by damaging her own body, as in anorexia, bulimia, or self-mutilation; and by physical, sexual, or psychological child abuse.

The second part of the book deals with perverse motherhood, and the third part with prostitution. She acknowledges that we do not yet fully understand female sexuality or its perverse manifestations, and that the theories propounded in this book are only a beginning. She emphasises, however, that understanding of the psychodynamic causes is essential for treatment to be undertaken.

The author draws throughout on the views and examples of other psychoanalysts, which are intermingled with her discussion (omitting, however, the work of Alice Miller). This makes it difficult to disentangle her views from those of others and to obtain a clear statement of her theory. The book however, is fascinating and easy to read and includes many of her own case examples. She has probably had more experience of perverse women than anyone else in Britain, has thought deeply about its causes and mechanisms, and has written a book which I believe will become a classic. It is certainly essential reading for analysts and psychotherapists. We eagerly await a volume on treatment.

ZAIDA HALL, *Consultant Psychotherapist,*
*Royal South Hants Hospital, Southampton*

**Becoming an Ex: The Process of Role Exit.** By HELEN EBAUGH. Chicago: University of Chicago Press. 1988. 246 pp. £8.75 (pb); £21.95 (hb).

This book is a sociological examination of an area psychiatrists link with changes in a person's assumptive world, either through normal life transitions or in relation to 'crisis'. For the sociologist, 'role' is the key concept, and in this book the anticipation of change of role, the stages of that change, and the outcome of change are analysed. Systematically collected data from 185 interviews are used, the group including ex-nuns (the author was one herself), widows, divorcees, ex-prostitutes, retired persons, professionals and, interestingly, transsexuals. 'Exes' from familial roles, occupational roles and ideological roles (religious and political) and stigmatised roles (ex-prisoners, ex-alcoholics) are included. The role exit process is followed, from first doubts, through seeking alternatives – the turning point – to creating the 'ex-role' (it is easier to be an ex-doctor than an ex-prisoner!).

'Passages' or 'turning points' are important at various stages of the life cycle. While this research does not introduce significant new ideas, it helps to flesh out an area which in psychotherapy not infrequently needs to be defined, understood, and worked through with the client.

SIDNEY CROWN, *Consultant Psychiatrist,*
*The London Hospital, Whitechapel*

**Mental Health Response to Mass Emergencies: Theory and Practice.** Edited by MARY LYSTAD. New York: Brunner-Mazel. 1988. 480 pp. $61.50.

In a world in which disasters, particularly technological disasters, seem to be becoming more common, the publication of this authoritative work is very timely. Written by 26 American planners, administrators, sociologists, psychiatrists, psychologists, and others concerned with the administration of mental health services in disaster areas, this book reviews an extensive scientific literature and comes up with important conclusions and recommendations. Of these the most important is probably the recognition that, since disasters can have serious consequences for the mental health of victims, relatives, and even professional caregivers, this needs to be taken into account in the planning of a response to disasters.

The first part of the book reviews research on the psychological and social consequences of disasters. Despite great differences between disasters, post-traumatic stress disorder emerges as a well-documented consequence of many. Factors which increase the risk of this and other disturbances of mental health can be identified, enabling people whose health is at risk to be offered special help.

The types of help likely to be of use are discussed in the second part. The emphasis here is on 'outreach', with those at risk being contacted as soon as possible after the disaster, and a general agreement that it is best to avoid attributions of mental illness. Support can be given to individuals, families, or groups and a variety of approaches are described. So too is the support and 'debriefing' of caring staff.

In the USA, as in Britain, disaster plans seldom make any provision for preventing psychiatric problems and treating those that arise. The final section of this book looks at the need for proper planning and for public and professional education in preparation for disasters. It is suggested that every community mental health plan should include the management of disasters, and every emergency and disaster plan should contain a mental health component.

With so many contributors, it is to be expected that the quality of contribution is uneven. One would not expect so moving a topic to be boring, but there are several chapters whose analytical detachment seems remote from the chaos and passion of a disaster area. Even so, there is much to be learned from each chapter, and although the same basic messages emerge repeatedly the editor has done a good job in welding together a disparate group of contributors. She is Chief of the Emergency Services Branch of the United States National Institute of Mental Health, and so this book will have a particular appeal to planners and administrators. As such it contrasts with Beverley Raphael's *When Disaster Strikes* (Basic Books, New York), which is aimed at the clinician. Both books should be read by all who are seriously interested in preparing for the disasters that will surely continue to occur.

COLIN M. PARKES, *Senior Lecturer in Psychiatry,*
*The London Hospital Medical College*

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